Science and Art Department of the Committee of Council on Education.

CATALOGUE

OF THE

COLLECTION ILLUSTRATING CONSTRUCTION AND BUILDING MATERIALS

IN THE

SOUTH KENSINGTON MUSEUM.

EDITED BY HENRY SANDHAM,

KEEPER.

THIRD EDITION.

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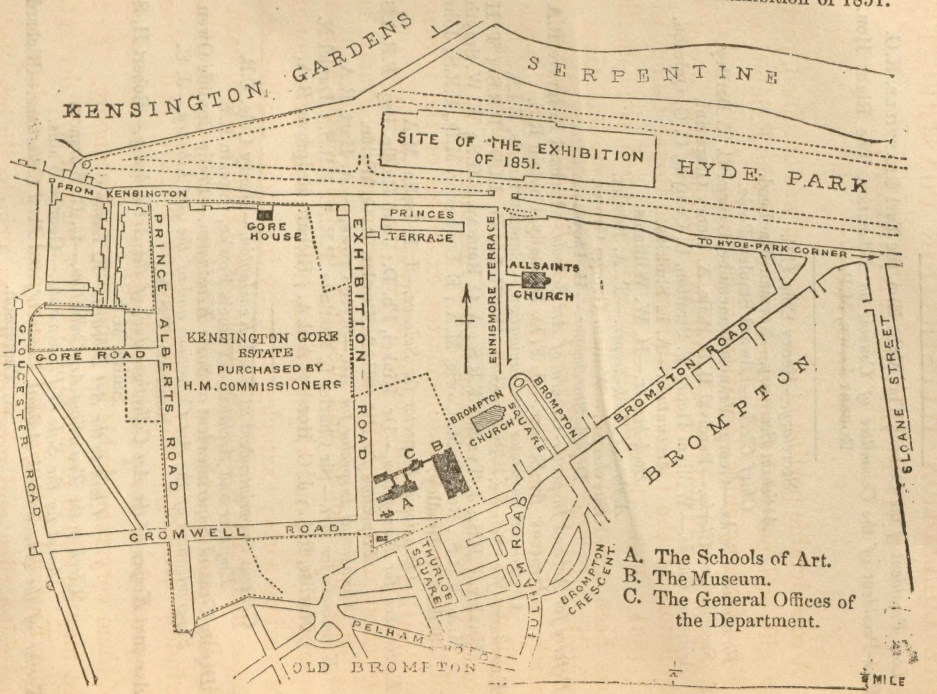
PLAN Showing the Position of the OFFICES, &c., of the SCIENCE AND ART DEPARTMENT at South Kensington, and the Boundary (by a dotted line) of the Estate of the Commissioners for the Exhibition of 1851.



THE COLLECTION ILLUSTRATING CONSTRUCTION AND BUILDING MATERIALS.

A considerable portion of this collection was obtained, partly by gift and partly by purchase, at the Paris Exhibition of 1855. Subsequently, additions were made of a number of objects of a like nature, selected from among those given by exhibitors of the Great Exhibition to the Royal Commission of 1851. From the small nucleus thus formed, the collection has been gradually increasing up to the present time by contributions of new inventions in building contrivances, partly solicited, but by far the greater part the result of applications to exhibit from the parties themselves. It contains samples of building stones and marbles, specimens of all the best cements and asphaltes, examples of the numerous applications of ceramic manufacture to the purposes of construction, more especially in this country and in France, such as tiles for roofing and flooring, of the newest and most approved form, and clays; bricks, hollow, solid, and moulded, of various sorts; examples of many ingenious applications of those materials which are made use of in France, such as lintels, jambs, exterior and interior cornices, mouldings, window dressings, &c.; specimens of English and French fire-proof floors for public buildings and private houses, some of them very remarkable for ingenuity and economy. To this list may be added ornamental tiles for interior wall decoration from England, France, and Spain, and a great variety of hip and ridge tiles, and crest ornaments, principally intended for edifices in the Gothic style. Some bricks, decorated after the manner of majolica, and samples of enamelled slate and other imitations of marble, may be classed with this description of material. The collection is rich in specimens of woods of construction, principally from England and her colonies; among the latter are a number that have undergone several

tests for strength, weight, &c., the particulars of which are registered on the samples. The Governor of Jamaica has reported to the Colonial Secretary, that, owing to the influence of the Paris Exhibition in making known the Jamaica woods, the export of them has increased tenfold.

For the information of persons who may wish to exhibit articles or material relating to construction, a copy of the regulations for the guidance of contributors to this section of the South Kensington Museum is here appended, to which is also added the form of application for space, which all persons desirous of becoming exhibitors are required to fill up, and which forms may be obtained of the attendants.

Science and Art Department of the Committee of Council on Education.

SOUTH KENSINGTON MUSEUM.

REGULATIONS

FOR

THE GUIDANCE OF CONTRIBUTORS TO THE MUSEUM OF CONSTRUCTION.

Superintendent :—Captain Fowke, Royal Engineers.

1. The Museum is open FREE, on Mondays, Tuesdays, and Saturdays. The Students' Days are Wednesdays, Thursdays, and Fridays, when the public are admitted on payment of 6*d.* each person. The hours on Mondays, Tuesdays, and Saturdays are from 10 A.M. till 10 P.M., on Wednesdays, Thursdays, and Fridays from 10 A.M. till 4, 5, or 6 P.M., according to the season.

2. Contributions accepted for exhibition must be forwarded at the risk of the contributors. The specimens will be classified and arranged by the officers of the Museum.

3. Descriptive labels will be attached to the various contributions, giving their names, uses, prices, &c.

4. It is desirable that the usual retail price should be distinctly marked on all articles sent for exhibition.

5. Objects admitted to the Museum cannot be removed (except under special circumstances, by written agreement), until they have been exhibited for a period of at least twelve months.

6. The exceptions to the foregoing regulation would be for articles of a perishable nature, and for such as may have become damaged by exposure or from other causes.

7. In order to protect the property of exhibitors, no article will be allowed to be removed from the Museum without a written authority from the Director.

8. A catalogue will, from time to time, be published, so as to keep pace as much as possible with the additions to, and the withdrawals from, the Museum.

9. Exhibitors desirous of advertising in the Catalogue may send their prospectuses, illustrations, price-lists, &c., 1,000 copies at a time, and printed in demy 8vo., so that they may be bound up in the Catalogue. The binding will be free of cost to exhibitors.

10. Persons desirous of exhibiting in the Museum of Construction may obtain the forms necessary to be filled up, either from the attendant in the Museum, or on application to the Secretary of the Science and Art Department, South Kensington, London, W., to whom all contributions to the Museum should be addressed, labelled "Museum of Construction."

Henry Cole, Secretary.

By order of the
Committee of Council on Education.

SOUTH KENSINGTON MUSEUM.

FORM OF APPLICATION FOR SPACE IN MUSEUM OF CONSTRUCTION.

The undersigned is desirous of becoming an exhibitor in the Museum of Construction, subject to the regulations and conditions annexed.

Name of Applicant, or Firm } _____

Nature of business carried on _____

Address _____

Nature of objects proposed to be exhibited } _____

		Feet.	Inches.
Space [whether wall, floor, or counter,] which the objects are likely to occupy	Length - -		
	Breadth - -		
	Height - -		

This form when filled up may either be left with the attendant in the Museum, or addressed to the Secretary of the Science and Art Department, South Kensington, London, W., with the words "Museum of Construction" in the lower left-hand corner of the envelope.

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DETAILED LIST OF ARTICLES IN EACH SECTION.

NOTE.—For an Alphabetical List of the Exhibitors in the Museum of Construction, see the end of Appendix, page 233.

SECTION A.—Page 21.

BUILDING, PAVING, AND OTHER STONE.

STONE :

Ailsa Craig, No. 6 A.
Ancaster, No. 5 A.
Anston, No. 4 A.
Aubigny, No. 1 A.
Black flagstone, Isle of Man, Nos. 12 A, 5 B.
Building stones, various, Nos. 8 A, 9 A, 13 A, 14 A, 15 A.
Caen stone, Nos. 2 A, 3 A.
Craigleith, No. 7 A.
Dean Forest, No. 16 A.
Flintshire, No. 32 A.
Limestones, Nos. 10 A, 11 A, 17 A, 23 A.
Do. Blue Lias, Nos. 24 A, 25 A.
Paving stone, Bristol, No. 27 A.
Portland stone, No. 26 A.
Sandstones, Nos. 18 A, 19 A, 20 A, 21 A.
Tisbury stone, No. 28 A.
Miscellaneous stones, Nos. 22 A, 23 A, 29 A, 30 A, 31 A, 33 A, 34 A, 35 A.

GRANITE :

Bonaw, Nos. 44 A, 46 A.
Cornish, No. 40 A.
Craignair, Kirkcudbright, No. 42 A.
Inverary, Nos. 43 A, 46 A.
Jersey and Guernsey, No. 41 A.
Peterhead, No. 45 A.
Porphyritic, No. 48 A.
Miscellaneous, Nos. 46 A, 47 A, 49 A, 50 A.

PORPHYRIES :

Cornish, Nos. 37 A, 38 A.

ARTIFICIAL STONE, Nos. 52 A, 53 A, 54 A, 55 A, 56 A.

Section B.—Page 31.

MARBLE, &c.

Marble :
- Black, Isle of Man, No. 6 B.
- Devonshire, Nos. 1 B, 2 B.
- Derbyshire, Nos. 3 B, 4 B, 4a B.
- Irish, No. 11 B.
- Purbeck, No. 5 B.
- Belgian, No. 16 B.
- French, Nos. 13 B, 14 B.
- Grecian, No. 17 B.
- Italian, No. 18 B, 19 B.
- Spanish, No. 15 B.

Miscellaneous Marbles, Nos. 12 B, 20 B, 21 B, 27 B, 33 B, 41 B.

Alabaster, Nos. 22 B, 23 B, 24 B.

Serpentine, Nos. 25 B, 26 B.

Artificial Marbles :
- Composition, No. 34 B.
- Imitation, Nos. 38 B, 39 B, 40 B.
- Scagliola, Nos. 28 B, 29 B, 30 B, 31 B, 35 B, 36 B, 37 B.

Applications of Marble, Nos. 7 B, 7a B, 8 B, 9 B, 10 B, 37 B.

Section C.—Page 38.

SLATE AND ITS APPLICATION.

Slate :
- Devonshire, Nos. 1 C, 2 C.
- Welsh, Nos. 3 C, 4 C, 5 C, 6 C, 6 a C.
- Scotch, No. 7 C.
- Turkish, No. 22 C.
- Miscellaneous, No. 8 C.

Enamelled Slate, Nos. 16 C, 17 C, 18 C, 19 C, 20 C, 21 C.

Applications of Slate, Nos. 9 C, 10 C, 11 C, 12 C, 13 C, 14 C, 15 C.

Section D.—Page 43.
CEMENTS, PLASTERS, &c.

Cements :
Martin's, Nos. 7 D, 8 D.
Medina, No. 15 D.
Portland, Nos. 2 D, 3 D, 4 D, 13 D, 21 D.
Roman, Nos. 5 D, 6 D.
Scott's, Nos. 1 D, 8 a D, 9 D, 10 D, 11 D, 12 D.
Concretes, Nos. 14 D, 15 D, 16 D, 17 D, 18 D, 19 D, 20 D, 28 D.
Miscellaneous, Nos. 22 D, 23 D, 24 D, 25 D, 26 D.

Plaster :
Paris, Nos. 29 D, 30 D.
Scott's, No. 28 D.
Miscellaneous, Nos. 31 D, 32 D, 33 D, 34 D, 35 D, 36 D.

Section E.—Page 53.
BRICKS OF ALL KINDS.

Bricks :
Common, Nos. 1 E, 2 E, 3 E, 4 E, 5 E, 6 E, 7 E, 8 E, 11 E, 12 E, 16 E, 17 E.
Coping, Nos. 24 E, 25 E, 26 E, 27 E, 28 E, 29 E, 30 E, 31 E, 32 E.
Terra metallic, Nos. 14 E, 15 E, 16 E, 17 E.
Miscellaneous, Nos. 9 E, 10 E, 18 E, 19 E, 20 E, 21 E, 22 E, 19 D.
Austrian bricks, No. 23 E.

Fire Bricks, Lumps, &c. :
Newcastle bricks, No. 98 E.
Stourbridge ditto, Nos. 97 E, 99 E.
Welsh ditto, No. 100 E.
Portuguese fire bricks, No. 107 E.
Miscellaneous, Nos. 101 E, 102 E, 103 E, 104 E, 105 E, 106 E.
Newcastle Lumps, No. 109 E.
Stourbridge ditto, No. 110 E.
Welsh ditto, No. 111 E.
Newcastle Tiles, No. 112 E.
Stourbridge ditto, No. 113 E.
Welsh ditto, No. 114 E.
Windsor ditto, Nos. 116 E, 117 E.
Miscellaneous, Nos. 118 E, 119 E.

Fire-clay Articles :
Chimney tops, Nos. 128 E, 129 E, 130 E, 131 E.
Grates and Stoves, Nos. 122 E, 123 E, 124 E, 125 E, 126 E, 127 E.
Ridge tiles, No. 132 E, 133 E.
Wall copings, Nos. 31 E, 32 E.
Miscellaneous, Nos. 121 E, 134 E, 135 E, 136 E, 137 E.

GLAZED BRICKS, Nos. 48 E, 49 E, 50 E, 51 E, 52 E, 53 E.

HOLLOW BRICKS :

Hollow bricks, Nos. 38 E, 39 E, 40 E.
Perforated ditto, Nos. 33 E, 34 E, 35 E, 36 E, 37 E.
Hollow bricks—French, Nos. 45 E, 46 E.
Hollow tubes and tiles, Nos. 38 E, 41 E, 42 E.
Ditto, ditto, French, Nos. 45 E, 47 E.
Miscellaneous hollow bricks, Nos. 43 E, 44 E.

MOULDED BRICKS, Nos. 54 E, 55 E, 56 E, 57 E, 58 E, 59 E, 60 E, 61 E, 62 E, 63 E, 64 E, 65 E, 66 E, 67 E, 68 E.

MOULDED AND GLAZED BRICKS, Nos. 69 E, 70 E, 71 E, 72 E.

PAVING BRICKS :

Clinkers, Nos. 74 E, 82 E, 83 E, 84 E, 85 E, 86 E, 87 E, 88 E.
Paviours', Nos. 75 E, 76 E, 77 E, 78 E.
Terra metallic, Nos. 79 E, 80 E, 81 E, 89 E, 90 E, 91 E, 92 E, 93 E, 94 E, 95 E.

MISCELLANEOUS ARTICLES :

Garden edging, Nos. 140 E, 141 E, 142 E, 143 E, 144 E, 145 E, 146 E, 147 E, 148 E, 149 E, 150 E, 151 E, 152 E.

SECTION F.—Page 72.

TILES, FOR FLOORING, ROOFING, AND WALL DECORATION.

ROOFING TILES :

Pan tiles, Nos. 1 F, 2 F, 3 F.
Ditto, Terra metallic, No. 4 F.
Ditto, Ventilating, No. 5 F.
Channelled tiles, Nos. 6 F, 7 F.
Plain tiles, ordinary, Nos. 8 F, 9 F, 12 F.
Ditto, various, Nos. 10 F, 11 F, 13 F, 14 F, 15 F, 16 F.
Hip tiles, Nos. 17 F, 18 F, 19 F, 20 F, 21 F, 22 F.
Ridge tiles, Nos. 40 F, 44 F, 50 F, 54a F, 56 F.

ORNAMENTAL ROOFING TILES :

Hip tiles, Nos. 61 F, 66 F, 70 F.
Plain tiles, Nos. 25 F, 26 F, 27 F, 28 F, 29 F, 30 F, 31 F, 33 F, 34 F, 35 F, 36 F.
Ridge tiles, Nos. 41 F, 42 F, 45 F, 46 F, 47 F, 48 F, 51 E, 52 F, 54 F, 55 F, 57 F, 58 F, 60 F, 62 F, 63 F, 64 F, 71 F.
Valley tiles, No. 37 F.
Miscellaneous, Nos. 32 F, 49 F, 53 F, 59 F, 65 F, 67 F, 68 F, 69 F, 72 F, 73 F.
Austrian tiles, No. 74 F.
French ditto, Nos. 75 F, 76 F, 77 F, 78 F.
Miscellaneous, No. 79 F.

FLOORING TILES :

Common; red, buff, and black colours, Nos. 80 F, 81 F, 82 F, 83 F, 87 F, 88 F, 89 F, 90 F, 91 F, 92 F.
Miscellaneous, Nos. 84 F, 85 F, 86 F, 109 F.
Encaustic tiles, Nos. 96 F, 98 F, 100 F, 101 F.
Glazed ditto, Nos. 93 F, 94 F.
Mosaic ditto, No. 103 F.
Tile floors, laid, Nos. 97 F, 99 F, 102 F.
French flooring tiles, Nos. 105 F, 106 F, 107 F, 108 F.
Roman mosaics, No. 104 F.

WALL TILES :

Common glazed, Nos. 111 F, 112 F, 114 F.
Majolica ware, No. 118 F.
Ornamental tiles, Nos. 119 F, 120 F, 121 F, 123 F, 124 F, 125 F.
Porcelain ditto, Nos. 115 F, 116 F, 117 F.
Miscellaneous ditto, Nos. 126 F, 127 F, 128 F, 129 F, 130 F, 131 F, 132 F.
Dutch tiles, Nos. 110 F, 113 F.
French ditto, Nos. 135 F, 136 F.
Italian ditto, No. 134 F.
Spanish ditto, No. 133 F.

SECTION G.—Page 91.

TERRA COTTA.

BRICKS AND LUMPS, Nos. 1 G, 3 G, 4 G, 6 G.
CHIMNEY TOPS, Nos. 37 G, 38 G, 39 G, 40 G.
ORNAMENTAL MOULDINGS, Nos. 14 G, 15 G, 16 G, 17 G, 18 G, 21 G.
STOVES, Nos. 41 G, 42 G.
TILES, Nos. 2 G, 45 G, 46 G, 47 G, 48 G, 49 G.
TRUSSES, Nos. 9 G, 10 G, 11 G, 12 G, 13 G, 20 G, 92 G.

TRACERY :

For windows, Nos. 7 G, 8 G.
Ditto, (French work), Nos. 44 G, 45 G, 46 G, 47 G, 48 G, 49 G.
For ornamental work, Nos. 127 F, 22 G, 23 G, 24 G, 25 G, 26 G, 27 G, 28 G, 29 G, 30 G, 31 G, 32 G, 33 G, 34 G, 35 G, 35 a G.
Ditto, (French work), Nos. 50 G, 51 G, 52 G.

VARIOUS TERRA COTTA WORK, Nos. 5 G, 55 G, 56 G, 57 G, 58 G, 59 G, 60 G, 61 G, 62 G, 84 G, 85 G, 86 G.

FIGURES AND STATUES, Nos. 94 G, 95 G, 96 G, 97 G, 98 G, 99 G, 100 G, 101 G.

VASES, Nos. 64 G, 65 G, 66 G, 67 G, 68 G, 69 G, 70 G, 71 G, 72 G, 73 G, 74 G, 75 G, 76 G, 77 G, 78 G, 79 G, 80 G, 81 G, 82 G, 83 G, 88 G, 89 G, 90 G, 91 G.

Section H.—Page 105.

EARTHENWARE, APPLIED TO SANITARY PURPOSES.

Bricks, Tiles, &c., for drains, Nos. 1 H, 2 H, 7 H, 10 H.

Drain Traps, Nos. 3 H, 4 H, 5 H, 6 H, 11 H.

Drain Pipes :

Agricultural,	Nos. 8 H, 9 H.
Ordinary,	No. 12 H.
Patent,	Nos. 19 H, 20 H, 21 H.
Stoneware,	Nos. 13 H, 14 H, 15 H, 18 H, 22 H.
Terra metallic,	Nos. 16 H, 17 H.

Elbow Pipes :

Stoneware, No. 33 H.
Terra metallic, No. 32 H.
Various, Nos. 35 H.

Invert Blocks, for sewer work, Nos. 24 H, 40 H, 41 H, 42 H, 43 H.

Junction Pipes :

Stoneware, Nos. 26 H, 27 H, 28 H, 30 H.
Terra metallic, No. 25 H, 29 H.
Various, No. 31 H.

Syphon Pipes, Nos. 36 H, 37 H, 38 H, 39 H.

Smoke and Air Flues, Nos. 44 H, 45 H, 46 H, 47 H.

Chimney Tops, No. 51 H.

Miscellaneous Articles, Nos. 48 H, 49 H, 50 H.

Section I.—Page 111.

ASPHALTES, BITUMEN, &c.

Asphalte :

Laminée (French), No. 12 I.
Limmer, Nos. 9 I, 10 I.
Metallic lava, Nos. 4 I, 5 I.
Seyssell, Nos. 1 I, 2 I, 3 I, 6 I, 7 I, 8 I.
Bitumen, Nos. 13 I, 14 I, 16 I.

Section J.—Page 114.

IRON AND METAL WORK.

Iron Work :

Drain grids, Nos. 10 J, 11 J.

Girders, (French), Nos. 22 J, 23 J, 24 J, 25 J, 26 J, 27 J, 28 J, 29 J, 30 J, 31 J.

Pavement, No. 19 J.

Stoves and grates, Nos. 14 J, 15 J, 44 J, 45 J, 46 J, 47 J, 48 J, 49 J, 50 J, and Nos. 114 E to 120 E.

Window sashes, &c., Nos. 1 J, 2 J, 3 J, 4 J, 5 J.

Metal Work :

Chimney tops, No. 16 J, 17 J.

House fittings, Nos. 6 J, 7 J, 8 J, 9 J, 9a J, 10 J, 10a J, 11 J, 11a J, 12 J, 13 J, 37 J, 38 J, 39 J.

Metal for roofing, wall lining, &c., No. 32 J, 36 J.

Zinc work, Nos. 33 J, 34 J, 35.

Wire sash lines, &c., No. 40 J.

Miscellaneous Articles, Nos. 18 J, 19 J, 20 J, 41 J, 42 J, 43 J, 51 J.

Section K.—Page 131.

WOODS.

British Woods, Nos. 1 K, 2 K, 3 K, 4 K, 6 K, 6a K.

Floorings, No. 10 K.

Mouldings, No. 7 K, 8 K, 9 K.

Miscellaneous, No. 11 K, 12 K.

Colonial Woods :

Africa, Nos. 19 K, 20 K, 21 K.

Australia, No. 23 K.

Canada, No. 13 K.

Ceylon, Nos. 17 K, 18 K.

Collection of woods : from New South Wales, British Guiana, and Jamaica, No. 22 K.

For experiments on the strength of these woods, *see* Appendix.

India, Nos. 14 K, 15 K, 16 K.

New Brunswick, No. 26 K.

New Zealand, No. 24 K.

St. Domingo, No. 27 K.

Tasmania, No. 25 K.

Miscellaneous collections, Nos. 28 K, 29 K, 30 K.

FOREIGN WOODS :
Algiers (2 panels), No. 39 K.
China, No. 40 K.
Egypt, Nos. 37 K, 38 K.
Mexico, Nos. 41 K.
Portugal, Nos. 32 K, 33 K.
Russia, No. 35 K.
Siam, No. 42 K.
Spain, No. 34 K.
Various, Nos. 36 K, 43 K, 44 K.

SECTION L.—Page 138.

GLASS AND ITS APPLICATIONS.

COLOURED GLASS,	Nos. 19 L, 20 L, 21 L.
CROWN	ditto, No. 1 L.
ENAMELLED	ditto, Nos. 22 L, 23 L, 24 L.
OPAL	ditto, No. 6 L.
PLATE	ditto, Nos. 7 L, 8 L, 9 L, 17 L, 18 L.
Ditto	ditto (British polished), Nos. 10 L, 11 L, 12 L.
Ditto	ditto (rolled), Nos. 13 L, 14 L.
Ditto	ditto (rolled, quarry), Nos. 15 L, 16 L.
SHEET	ditto, Nos. 2 L, 3 L, 4 L, 5 L.

ORNAMENTAL GLASS :
Cut, borders and rosettes, Nos. 27 L, 28 L.
Embossed, ditto, Nos. 25 L, 26 L.
Window panes, Nos. 29 L, 30 L, 31 L.

ECCLESIASTICAL GLASS :
Ornamental, Nos. 34 L, 35 L.
Tinted, No. 33 L.

GLASS USED IN FLOORS, ROOFS, &c. :

Area lights, rough cast glass,	Nos. 41 L, 42 L.
Coal-hole plates, ditto,	No. 44 L.
Step risers, ditto,	No. 43 L.
Slates, in sizes, various,	Nos. 39 L, 40 L.
Tiles, various roofing,	Nos. 37 L, 38 L.
Miscellaneous articles,	Nos. 46 L, 47 L, 48 L, 49 L, 50 L, 51 L.

Section M.—Page 144.

MODELS, &c.

Buildings, Nos. 1 M, 2 M, 3 M, 4 M, 5 M, 6 M, 7 M, 8 M, 9 M, 10 M, 11 M, 12 M, 15 M, 16 M, 17 M, 18 M, 65 M, 66 M, 67 M, 68 M, 69 M, 70 M, 71 M, 72 M, 73 M, 74 M, 75 M, 76 M, 77 M, 78 M, 79 M, 80 M, 104a M.

Construction, Nos. 4 M, 13 M, 14 M, 19 M, 20 M, 60 M, 61 M, 82 M, 83 M, 84 M, 85 M, 86 M, 87 M, 88 M, 89 M.

Floorings, Nos. 45 M, 46 M, 47 M, 48 M.

Roofings, Nos. 13 M, 14 M, 103 M.

Stairs and staircases, Nos. 49 M, 50 M.

Fittings for Windows, Nos. 22 M, 23 M, 24 M, 25 M, 26 M, 27 M, 28 M, 29 M, 30 M, 31 M, 34 M, 35 M, 39 M, 40 M, 41 M, 42 M, 43 M, 44 M.

Fittings for Doors, Nos. 51 M, 52 M, 53 M.

Fittings for Grates and Fire-places, Nos. 51 M, 52 M, 53 M.

House Fittings, Nos. 57 M, 62 M, 63 M, 102 M.

House decoration, Nos. 97 M, 98 M, 99 M, 100 M, 101 M.

Ventilating appliances, &c. Nos. 32 M, 36 M, 37 M, 38 M, 59 M.

Miscellaneous Models, Nos. 3a M, 19 M, 90 M, 91 M, 92 M, 93 M, 94 M, 95 M, 96 M, 104 M, 105 M, 106 M, 107 M.

Section N.—Page 160.

PAPER, PAPIER MACHÉ, &c.

Carton Pierre decorations, Nos. 10 N, 11 N, 12 N, 13 N, 14 N, 15 N.

Mouldings (papier maché), Nos. 7 N, 8 N.

Ditto (composition), Nos. 9 N, 16 N.

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CATALOGUE.

Section A.

BUILDING, PAVING, MILL STONES, GRANITE, AND ARTIFICIAL STONE.

STONE.

No. 1 A.

Specimen.—Aubigny Stone (wrought).

Gates and George, Caen Sufferance Wharf, Rotherhithe.

No. 2 A.

Specimens.—Caen Stone.

Gates and George, Caen Sufferance Wharf, Rotherhithe.

No. 3 A.

Virgin and Child.—Caen Stone.

By William Farmer, 4, Mead Place, Westminster Road.

Note.—The stone obtained from the quarries of Allemagne and others, near Caen, in Normandy, has been used in ecclesiastical architecture for so many centuries, that it would be useless to trace back its history. The rock is an oolite belonging to about the same geological period as our own oolites worked near Bath; but the colour is better and more uniform, the texture far closer, and the material superior in almost every respect. It is at first absorbent, but improves on exposure. It cuts with perfect facility, and is thus admirably adapted for ornamental work in architecture, especially when sheltered from the weather It may be had in blocks of any reasonable size and proportions, and is the finest and most valuable stone of its kind obtained from the secondary rocks. For certain kinds of exposure it is inferior to some of the English oolitic stones, but none excels it for internal work.

No. 4 A.

Specimen.—Anston Stone.

Magnesian limestone, used in the construction of the new Houses of Parliament, Westminster, from quarries at Anston, Yorkshire, on the estate of the Duke of Leeds, belonging to Mr. Thos. Grissell, 11, New Palace Yard, Westminster.

Note.—The magnesian limestone used in the outside of the Houses of Parliament was selected on the recommendation of a Royal Commission,

after careful examination, as the finest available material to be obtained. It is a compact semi-crystalline rock, consisting of nearly equal proportions of carbonate of lime and carbonate of magnesia. It is of uniform and elaborate hardness. Not very costly either to obtain or work; weathers well, and of good colour; and is remarkable for its power of resisting compression. It is much heavier than most limestones, weighing upwards of 150 lbs. to the cubic foot.

No. 5 A.

SPECIMEN.—ANCASTER STONE.

The specimen is formed to show the close texture of the oolite and the fine arris it will carry. Kirk and Parry, Sleaford.

NOTE.—Ancaster stone is a fine cream-coloured oolite, cemented by compact, and often crystalline, carbonate of lime. There are numerous beds, the entire depth of workable stone being 13 feet; and blocks of 3 to 5 tons being obtainable. The stone weighs 139 lbs. 4 ozs. per cubic foot, absorbs very little water; cohesive power tolerably high. Composition:—Carbonate of lime, 9·36; carbonate of magnesia, 2·9; with a little iron and alumina, and a trace of bitumen. Belvoir Castle, Bolton House, and numerous mansions and churches in Lincolnshire are constructed of this stone.

No. 6 A.

SPECIMEN STONE.—AILSA CRAIG.

Alexander Cassels, Edinburgh.—1851.

NOTE.—Ailsa Craig consists of a single rock of greyish compact felspar, with small grains of quartz, and very minute particles of hornblende. The height is stated to be 1,100 feet, its length 3,300, and its breadth 2,200. On the east it rises by steps, but from the south, round by the west to the north, it is more perpendicular, and divided into columns. It rises abruptly from deep water, about ten miles west of the coast of Ayrshire and fifteen miles south of the Isle of Arran.

No. 7 A.

SPECIMEN.—CRAIGLEITH STONE.

George Johnstone, Craigleith, Edinburgh.—1851.

NOTE.—The Craigleith stone is a sandstone of the carboniferous series, consisting of fine quartz grains with a silicious cement, and occasional plates of mica. It is obtainable of any practicable length and breadth, and up to ten feet thick. Weight per cubic foot, 146 lbs. It consists of more than 98 per cent. of silica and 1 per cent. carbonate of lime.

No. 8 A.

SPECIMEN OF STONE.

County Clare, Ireland. J. Long, producer.—1851.

No. 9 A.

SPECIMENS OF BUILDING STONE.

Limerick, Ireland. J. Long, producer.—1851.

No. 10 A.

SPECIMEN OF LIMESTONE.

From Pentregwyddel, near Abergele. Raynes, Lupton, and Co., Liverpool, producers.—1851.

No. 11 A.

SPECIMENS OF OOLITIC LIMESTONE.

From the Oreton Bank Works, Stottesden, Cleobury Mortimer, Shropshire.—1851.

No. 12 A.

BLACK FLAGSTONE (Posidonia Schist). Prepared in Cubes.

From Poolvash, Isle of Man.—1851. See No. 6 B, p. 31.

NOTE.—The black flagstone of Poolvash (found on the south side of the island, near Castletown, and belonging to the carboniferous limestone) is a bed whose thickness varies from a few inches up to 20 feet. It is too soft to take a polish, and is generally finished with lamp black and oil, or, in some cases, with French polish. It is very easily wrought, and its durability is well seen in the steps of St. Paul's Cathedral (presented about the commencement of the last century by Bishop Wilson).

Messrs. Quilliam and Creer have the lease of the quarries from the Crown, and their works are in Castletown, on the seashore, at a convenient place for shipment.

No. 13 A.

SPECIMENS OF BUILDING STONES. Prepared in Cubes.

Liskeard Committee, Liskeard, Cornwall.—1851.

No. 14 A.

SPECIMENS OF BUILDING STONES.

From the quarries in the immediate vicinity of Knaresborough. Frederick Powell, Knaresborough, Yorkshire.—1851.

No. 15 A.

SPECIMENS OF STONES.

Used at Liverpool for building purposes.—1851.

No. 16 A.

SPECIMENS, DEAN FOREST STONE, FOR STEPS, COPING, &c.

From Dean Forest, Clearwell, near Coleford, Gloucestershire. Mr. Richard Townsend, producer.

No. 17 A.

Cube Magnesian Limestone or Dolomite.

Charles Lindley, Proprietor, Mansfield, Notts.

Note.—From the Mansfield Woodhouse Quarry, re-opened 1840, after a lapse of several centuries, to obtain the supply of stones for the erection of the new Houses of Parliament at Westminster.

Chemical analysis:—Carbonate of lime, 51·65; carbonate of magnesia, 42·60; silica, 3·70; water and loss, 2·05.

No. 18 A.

Cube White Calcareous Sandstone.

Charles Lindley, Proprietor, Mansfield, Notts.

Chemical analysis:—Silica, 51·40; carbonate of lime, 26·50; carbonate of magnesia, 17·98; iron alumina, 1·32; water and loss, 2·08.

No. 19 A.

Cube Red Calcareous Sandstone.

Charles Lindley, Proprietor, Mansfield, Notts.

Chemical analysis:—Silica, 49·4; carbonate of lime, 26·5; carbonate of magnesia, 16·1; iron alumina, 3·2; water and loss, 4·8. From quarries which have been in work for four hundred years. These two sandstones are the connecting link between the magnesian limestone and the new red sandstone formations, partaking of the characters of both.

Note.—The magnesian limestones, valuable for building purposes, are chiefly or entirely those which present equal proportions of carbonate of lime and carbonate of magnesia in a semi-crystalline state. Such stone has a peculiarly pearly lustre when broken, but its colour, when worked, is light yellowish brown, not changing by exposure. Its specific gravity is very high, the stone weighing upwards of 150 lbs. to the cubic foot. The cohesive power is very great, and hardly rivalled by any limestone.

No. 20 A.

Specimens of Sandstone.

From the Three Elms Quarries, near Hereford.—1851.

W. Jennings, Victoria Street, Hereford.

Note.—It is said to stand equally well on its edge or on its bed, and to be suitable for cider mills, sea walls, railway purposes, &c.

No. 21 A.

Specimens of Sandstones.

For purposes of construction, and grindstones:—1, millstone grit, Bull Hill Quarry; 2, millstone grit, Reeve's Edge Quarry; 3, blue sandstone, Green Moore Quarry; 4, brown sandstone, Green Moore Quarry; 5, blue sandstone, Brenkcliffe Edge

Quarry; 6, brown sandstone, Grenoside Quarry; 7, brown sandstone, Wickersley Quarry; 8, magnesian limestone, Steetley Quarry. W. B. Mitchell, Sheffield, producer.—1851.

No. 22 A.

SPECIMENS OF STONE.

From the Ardsley Oaks Quarry, Barnsley, Yorkshire.—1851.

No. 23 A.

SPECIMENS OF IRONSTONE, LIMESTONE AND FREESTONE, contained in the various strata of the mineral fields of Lanarkshire, Monkland Iron and Steel Company.—1851.

William Murray, 33, West George Street, Glasgow.

No. 24 A.

SPECIMENS.—BLUE LIAS LIMESTONE.

From Keinton, Somerset.—*1851.*

No. 25 A.

SPECIMEN.—BLUE LIAS LIMESTONE.

Lyme Regis, Dorset.—1851.

No. 26 A.

SPECIMENS OF BEST BED PORTLAND STONE AND WHITE BED PORTLAND STONE.

Showing different samples of workmanship.

NOTE.—The neighbourhood of Bristol is remarkable for the great variety of mineral produce which it yields, and the extended series of rocks observable within a moderate distance.

It presents, in the oolites, a series of building stones universally known throughout England; in the lias, a number of useful materials used for lime, cement, and other purposes; in the new red sandstone, mineral soils rich in agricultural produce; in the coal measures, a very large store of mineral fuel; and in the carboniferous limestone, admirable and beautiful building material, adapted for almost every variety of circumstances. The Mendip Hills supply an important series of metalliferous ores; and, in addition to these sources of interest, many illustrations of the extinct natural history of our country are obtained from almost all the formations down to those of the latest date.

No. 27 A.

SPECIMEN OF PAVING STONE. THIN-BEDDED PENNANT.

From Crewes Hole, Bristol.—1851.

No. 28 A.

SMALL SAMPLES OF TISBURY STONE.

From the Tisbury Quarries, near Salisbury, Wiltshire. J. Alford and Sons, Tisbury Quarries, Salisbury, and 53, Hindon Street, Pimlico, S.W.

No. 29 A.

SAMPLES OF LAMINATED SLATE FOR BUILDING PURPOSES.

J. Luscombe, Combe Royal, Kingsbridge, Devon.

No. 30 A.

SPECIMEN OF STONE.

From York Minster.

No. 31 A.

FRAGMENT OF STONE.

From the South Wall, York Minster.

No. 32 A.

SAMPLES OF BUILDING AND CUTTING STONES.

From the Talacre Quarries, Flintshire, the property of Sir Pyers Mostyn.

Thomas Williams, Talacre Quarries, Holywell, Flintshire.

No. 33 A.

SPECIMEN OF STONE.

From New Zealand.—1851.

No. 34 A.

TWO FIGURES, CARVED IN GREEN STONE.

From China.

No. 35 A.

MISCELLANEOUS BUILDING AND OTHER STONE.

PORPHYRY.

No. 37 A.

SPECIMENS OF PORPHYRY.

Nicholas Whitley, Truro, Cornwall.—1851.

No. 38 A.

SPECIMENS OF PORPHYRY.

Thomas Hicks, Truro, Cornwall.—1851.

NOTE.—The porphyries of Cornwall and other districts, where the primary and protrusive rocks prevail, have been neglected up to the

present time. In the decoration of Osborne and some other of the Royal residences ornamental stones have been used; many of them are of a beautiful description, susceptible of the highest polish, and all very durable. The greenstones, or as they are sometimes called ironstone porphyries, are now being introduced into London for road-making, and it appears to prove an exceedingly good material for that purpose.

GRANITE.

No. 40 A.

Two Granite Pilasters.

Polished on two surfaces, and finely dressed on the others. William and John Freeman, Granite Quarries, Penryn, Cornwall, and Millbank, Westminster.

Note.—The granite best known as Cornish is that obtained from near Penryn, which has been long and extensively used for various public works in England. It is obtained from various localities, and several qualities are employed, the finer kinds being very good. The quantity shipped at Penryn varies exceedingly in different years. The approximate value may be stated at about 1*s.* 9*d.* per cubic foot before export, and the weight is usually taken at 14 cubic feet to the ton.

No. 41 A.

Specimens of Granite,—Jersey and Guernsey.

H. White, producer, Jersey.—1851.

No. 42 A.

Slab of Granite.

From Craignair Quarry, near Dalbeattie, Stewartry of Kirkcudbright; 1851; showing some of the styles in which that stone may be dressed and polished. The value of this granite has been tried in the Liverpool docks and similar works. It is adapted for ornamental architecture.

Note.—A slab of granite from Craignair, near Dalbeattie, exhibited by the proprietor, Wellwood Maxwell, Esq., is from a well-known quarry of excellent material, adapted for ornamental architecture. The composition is a gray quartz with white or flesh-coloured felspar, and greenish hornblende, often in bands; it is therefore a syenite.

No. 43 A.

THREE SLABS POLISHED GRANITE,—INVERARY.

The granite of Inverary and the fine-grained granite of Bonaw are remarkable for hardness and extraordinary resistance to tear and wear.

William Sim, Inverary, Argyllshire, producer.—1851.

NOTE.—The granite of Inverary consists of distinct patches, protruding through the gneiss. The granite is of fine quality, and much used. It is of two kinds, the one containing mica and red felspar, and the other hornblende and white felspar with quartz.

No. 44 A.

THREE BALUSTRADES FINE-GRAINED BONAW GRANITE, HEWN WITH HAMMER AND CHISEL.

William Sim, Inverary, Argyllshire.—1851.

No. 45 A.

PEDESTAL IN BLUE PETERHEAD GRANITE.

John Hutchison, Monyray, near Peterhead.—1851.

No. 46 A.

GRANITE.

From the quarries at Inverary and Bonaw, Loch Etive, and from the Isle of Mull.—1851.

No. 47 A.

CUBES OF GRANITE.

Showing the various kinds of workmanship generally put on granite; namely, coarse picked, fine picked, nidged, or axed, and polished.—1851.

No. 48 A.

PORPHYRITIC GRANITE.

From Wexford, Ireland.—1851.

NOTE.—Most of the materials commonly used in construction in London, are illustrated in the above collection. The Cornish granites and the Portland stones may, however, be selected as requiring notice here. Of the former, those shipped from Penryn are the best known; but the quantity annually exported varies very greatly, and the qualities are also variable. The Portland stone is well known, and very excellent, but costly, and rather heavy; it contains 95 per cent. carbonate of

lime, 1 silica, and 1 carbonate of magnesia; specific gravity = 2·145, and cohesive power moderate. The upper beds above the freestone are the top-cap, skull-cap, and roach, the latter forming a good stone; the next bed, is the best or op bed, from 3 to 8 feet thick, and this is succeeded, by the middle or curf bed, and an inferior bottom bed. The position of the Portland stone is in the upper part of the upper oolites.

No. 49 A.

MISCELLANEOUS SPECIMENS OF MATERIAL USED FOR CONSTRUCTION, VIZ., GRANITES FROM CORNWALL, IRELAND, AND SCOTLAND. (MISCELLANEOUS.)

No. 50 A.

SPECIMEN OF A BLUE GRANITE.

From China. Worked into a ring 8½ inches in diameter; probably for a mirror. It is fitted to a stand of carved woodwork.

ARTIFICIAL STONE.

No. 52 A.

DOVETAILED ARCH.—ARTIFICIAL STONE.

F. Ransome & Co., Flint Wharf, Ipswich, and Cannon Street, Westminster.

NOTE.—This artificial stone differs from cements and other artificial stone in the employment of silica both as the base and combining material. It may be regarded as a collection of particles intimately combined with silicate of soda, by which they are held together as by a kind of glass. The materials, consisting of sand, clay, fragments of granite marble, &c., with a little pounded flint, are moulded into form by the aid of a solution of silicate of soda, and are then burnt in a kiln at a red heat. The water is thus driven off, and an insoluble silicate produced, so that the whole becomes a hard compact mass. This stone is much used in various ways, both in a compact, porous, and ornamental state.

No 53 A.

SPECIMENS OF ARTIFICIAL STONE.

F. & G. Rosher & Co., Manufacturers, Ward's Wharf, Upper Ground Street, Blackfriars, S.

No. 54 A.

IMITATION OF STONE FOR HOUSE DECORATIO

W. P. Holmes, Builder, Turnham Green.

No. 55 A.

Illustrations of M. Théodore Aze's Patent "Peinture Marbre," for the External Painting and Preservation of Brick or Stone Buildings.

Théodore Aze, 10, Rue Mauconseil, Paris, and 42, Bookham Street, Hoxton, N.

Note.—The Peinture Marbre has been very successfully applied in Paris for the external and internal painting and decoration of buildings. Portions of the Louvre have been coated externally with it for three years past, without deterioration, and several military barracks in Paris and the Provinces have also been successfully treated with this material.

It has recently been used by M. Aze, for the external painting of the Gold Hawk House, Shepherds' Bush, the residence of C. T. Whitmell, Esq.

The cost of coating or painting buildings with this peinture marbre may be quoted at 1*s*. per square yard.

The following are a few of the edifices in Paris which have been treated; with the names of the architects, from whom M. Aze holds very high testimonials:—

The Palais de Luxembourg, Gisors, Architect; The Hotel de Ville, Baltard and Langlais, Architects; The Barracks des Petits Peres, Grisars and Lucas, Architects; The Baths of the Place Breda, Tuilleuy, Architect; The Baths of the Feuillantines, Tuilleuy, Architect.

No. 56 A.

Illustrations of the Manufacture of a Patented Solution for the Induration and Preservation of Stone, Bricks, and other Building Materials.

Bartlett, Brothers, & Co., Devonshire Wharf, Camden Town, N.W. *See* Advertisement.

Note.—The materials of which this indurating solution is composed are Silicate of potash and Aluminate of potash. These substances, when mixed in the proportion of three parts of the Silicate, into one part of the Aluminate of potash, will gradually solidify, and produce a material insoluble in hot or cold water, or in dilute sulphuric and hydrochloric acids.

The complete re-combining property of this remarkable solution is illustrated fully by the small piece of stone exhibited, which is simply the recombination of powdered Bath stone.

The patentees and manufacturers are prepared to supply any quantity of this indurating solution, the price of which is 4*s*. per gallon.

Section B.

MARBLES AND IMITATION MARBLES.

No. 1 B.

Specimens of Marbles.

From Devonshire.—W. S. Hine, Brunswick Street, East Teignmouth. These are in slabs and highly polished.

No. 2 B.

Cubes of Devonshire Marble. One side polished.—1851.

Note.—The marbles of Devonshire are often coralline, but generally very crystalline, and much altered, the fossil remains being more or less obliterated. They often exhibit veins, and are varied and rich in colour. The chief objection to them in working arises from the frequent irregularity of texture they present, and their brittleness. Where more uniform, they may be manufactured for various ornamental purposes.

No. 3 B.

Specimen Marbles.

Derbyshire.—1851.

Note.—The Derbyshire marbles are entirely derived from the carboniferous limestone, and owe their varieties of colour and condition to various admixtures of carbon and metallic oxides. They are occasionally fossiliferous, being composed of corals, incrinital stones, or shells, sometimes oolitic, sometimes partly or entirely crystalline, and sometimes twined. They are, for the most part, well adapted for ornamental works.

No. 4 B.

Illustrations of Agara—Derbyshire.

G. Mitchell, Mason, Walton Street, Brompton, S.W.

No. 4 a B.

Slab of Jasper Marble, Polished—Devonshire.

G. Mitchell, Mason, Walton Street, Brompton, S.W.

No. 5 B.

Specimens of Purbeck Marble. (One piece, turned.)—1851.

Note.—Purbeck stone and Purbeck marble, materials susceptible of polish, and formerly much used in ecclesiastical architecture. The material is well adapted to church purposes when new and retaining its polish; but that being soon lost, the surface becomes discoloured and loses nearly all its former beauty. It is not much used at present, except for restorations.

No. 6 B.

SLABS OF POOLVASH BLACK MARBLE, inlaid with red and yellow composition, to imitate encaustic tiles.—1851.

Invented and designed by the Rev. J. G. Cumming, Isle of Man, and manufactured by Quilliam and Creer, Castletown, Isle of Man.—See note, *p. 23, No. 12 A.*

No. 7 B.

STATUETTE, WHITE MARBLE.

No. 7 a B.

FIGURE OF THE SAVIOUR WITH THE CROSS—WHITE MARBLE.

Lent by Charles Beale, Esq., 14, Moorgate Street, E.C.

No. 8 B.

WHITE MARBLE CHIMNEY PIECE.

F. J. Rowley, Hyde Road, Bridge Road, Battersea, S.W.—Price, 45*s.*

No. 9 B.

WHITE MARBLE CHIMNEY PIECE AND HEARTH.

G. Mitchell, Mason, Walton Street, Brompton, S.W.—Price, 35 guineas.

No. 10 B.

CHIMNEY PIECE, BLACK AND GOLD MARBLE.

G. Mitchell, Mason, Walton Street, Brompton, S.W.—Price, 17 guineas.

No. 11 B.

SPECIMENS OF MARBLES.

From Ireland. These are in slabs and polished.—1851.

NOTE.—Ireland is exceedingly rich in some varieties of marble and ornamental stone; and of these the black marbles of Kilkenny and Galway and the green kinds from Connemara are well known and much exported. The quarries from which these are obtained are considered capable of almost indefinite extension.

No. 12 B.

SPECIMENS OF MARBLE.

From Van Diemen's Land (Tasmania).—1851.

No. 13 B.

SPECIMENS OF MARBLES AND GRANITE.

From France.—M. Colin, à Epinal. These are in slabs, fixed into frames, and are polished.—1851.

No. 14 B.

SPECIMENS OF MARBLE.

From the Quarries of M. P. de Tinseau, St. Ulie, Dole, Jura France.

Presented by M. Cappe, Paris, 2, Quai de Billy.

NOTE.—Large blocks of this marble are exhibited in the International Exhibition of 1862. It has been extensively used in Paris for many of the great works and improvements lately effected in that city.

No. 15 B.

SPECIMENS OF MARBLES.

From Spain. These were shown in 1851 at the Great Exhibition, and are in slabs, averaging 12 × 8 inches.

No. 16 B.

SPECIMEN OF MARBLE.

St. Ann's. Belgium. A small piece of grey marble, about 4 inches square. From the Great Exhibition, 1851.

No. 17 B.

SPECIMENS OF MARBLES.

From Greece. These were exhibited in 1851 at the Great Exhibition, and comprise specimens of black, white, green, and other marbles.

No. 18 B.

TWO OBELISKS.—ITALIAN MARBLE.

Lent by Henry Cole, Esq., C.B. Science and Art Department, South Kensington.

No. 19 B.

SAMPLES OF MARBLES USED FOR THE RESTORATION OF THE WEST FRONT OF THE CHURCH OF SANTA CROCE, AT FLORENCE.

Presented by Henry Cole, Esq., C.B., Science and Art Department, South Kensington.

No. 20 B.

SLAB OF MARBLE FROM CALIFORNIA.

G. Mitchell, Mason, Walton Street, Brompton, S.W.

No. 21 B.

MISCELLANEOUS SPECIMENS OF MARBLES.

G. Mitchell, Walton Street, Brompton, S.W. 1 piece Sienna, 1 piece Devonshire, 1 piece Chinese.

No. 22 B.

A WORK IN ALABASTER.

By Mr. Cundy; being an illustration of what may be done in this material, and for which a prize medal was awarded by the jurors of the Great Exhibition of 1851.

A restoration of a portion of the monument of Philippa of Hainault, Queen of Edward III., in Westminster Abbey, executed in English alabaster, from the drawings and under the direction of Mr. G. G. Scott, A.R.A., and from the remains that have been found embedded in an adjoining tomb.

The statuettes seen in the portion exhibited, which represents the head of the altar tomb, are those of Edward the Black Prince, Lewis Emperor of Germany, King Edward III., John King of France, and William Earl of Hainault; besides the effigy of the Queen and the statuettes referred to, there were representations of angels in the tabernacle work and other parts, so that the whole monument contained no less than 80 figures. The statuettes and angels in the restoration were executed by John B. Philip.

The original monument was executed in the year 1370, by one Hawkin Liege, from France, at a cost of "133*l.* 6*s.* 8*d.*," or, when converted into our present currency, about 2,000*l.*

No. 23 B.

ILLUSTRATIONS IN ALABASTER.

G. Mitchell, Walton Street, Brompton, S.W.

No. 24 B.

SPECIMENS OF STALAGMITE, OR ORIENTAL ALABASTER.—1851.

No. 25 B.

SPECIMENS OF SERPENTINE.

Lizard Serpentine Company, Cornwall; Carleon Cove, Lizard, and 24, St. James' Street, London, S.W.

No. 26 B.

CHIMNEY PIECE—SERPENTINE.

Lizard Serpentine Company, Cornwall, and 24, St. James' Street, London, S.W.

NOTE.—Serpentine, a silicate of magnesia, coloured by iron, manganese, copper, and chromium, occurs in various places in Europe, and has been long

worked and much admired as an ornamental stone. The finer kinds, known as ophite, verde antique, &c., occur chiefly in Italy, and are very hard, and of somewhat different appearance from those of the Lizard Point, Cornwall, whence are obtained those here exhibited. The Cornish serpentines are extremely varied in colour, exhibiting veins of red traversing an olive-green ground, and are comparatively soft and easy to work. They are obtained in blocks of large size, and are capable of being brought into use as marble, and at prices not much more considerable. The constituents of the Lizard serpentine on analysis are found to be,—silica, 43·93; magnesia, 28·00; iron or chromium, 13·26; manganese, 0·35; lime, 2·60; alumina, 1·28; water, 12·42.

No. 27 B.

POLISHED SLAB OF SEPTARIA OR TURTLE STONE.

From the Oxford clay formation, Weymouth.—Robert Damon, Weymouth.—1851.

NOTE.—The septaria, or turtle stone, of which this is a favourable specimen, is obtained from all the principal clays found in England, and consists of concretionary portions in which the carbonate of lime, at first disseminated through the whole mass, had collected during, or before, the final drying of the bed. The carbonate of lime, afterwards crystallizing, occupied a still smaller space, as it was deprived of all extraneous matter; and the crevices thus formed have subsequently been filled up. There is often an organic centre to the concretions of which the septaria is formed. The name septaria is derived from the Latin septum, an inclosure.

No. 28 B.

CAPITAL.—ROSSO ANTICO (ITALY).

Presented by Henry Cole, Esq., C.B., Science and Art Department, South Kensington.

No. 29 B.

TWO SPECIMENS SCAGLIOLA (ITALY).

Presented by Henry Cole, Esq., C.B.

No. 30 B.

A CAST IN SCAGLIOLA OF THE BRONZE WOLF OF THE CAPITOL. ROME.

Manufactured at the Ateliers of the Marchese Campana, Naples.

Exhibited at the Florence Exhibition o 1861, where it was purchased for 36*l*.

No. 31 B.

A Satyr.—Imitation Rosso Antico.—Italian Work.

From the Ateliers of the Marchese Campana, Naples.

This figure was exhibited at the Florence Exhibition of 1861, and was there purchased for 6*l.* sterling.

No. 32 B.

Application of Minton's Parian China.—In Imitation of White Marble.—From Dorchester House, Park Lane.

Lent by Lewis Vulliamy, Esq., 1, Duncannon Street, Strand, W.C.

No. 33 B.

Marbles, Encrynites, Sandstone, &c. (Miscellaneous.)—1851.

No. 34 B.

Specimens of Apolyzoo or Artificial Marble.

From Madrid.—1851.

No. 35 B.

Specimens of Scagliola.—In Slabs for Wall Lining and Decoration.—Imitations of various Marble.

Bellman and Ivey, Manufacturers, 14, Buckingham Street, Fitzroy Square, W.

No. 36 B.

Pedestals in Scagliola.—Imitations of different Marbles.

Bellman and Ivey, 14, Buckingham Street, Fitzroy Square, W.

No. 37 B.

Specimens of Scagliola.—For Floors, Dados, &c.

Bellman and Ivey, Manufacturers, 14, Buckingham Street, Fitzroy Square, London, W.

No. 38 B.

IMITATION MARBLES.

Charles Iles and Co., Bradford Street, Birmingham.—1851.

NOTE.—An ingenious and cheap imitation of marble in soft and hard cement, invented and manufactured by Messrs. C. Iles and Co. The effect is produced by the waste materials of silk works, or the short cuttings from piled fabrics, as cloth and velvet, mixed with the cement.

No. 39 B.

IMITATION MARBLES.—IN SLABS, FOR WALL LINING, &C.

The Patent Maretzo Company, 28, Clement's Lane, Lombard Street, E.C.

NOTE.—This Patent material is manufactured from cement, and has an enamelled surface similar to enamelled slate. It is equally applicable for inside or outside decoration, and will bear exposure quite as well as real marble. Slabs in imitation of any kind of marble are made from $\frac{3}{4}$ of an inch to 1 inch in thickness, and of any shape or size required, for wall linings, skirtings, pilasters, columns, &c.

The cost of the material is, for slabs of self colours in any tint, 1*s.* 6*d.* per foot super.; and for imitations of marbles, from 1*s.* 9*d.* to 2*s.* per foot super.

No. 40 B.

IMITATION MARBLES, IN PAINT.

Charles Smith, 43, Upper Baker Street, W.—1851.

No. 41 B.

ORNAMENTAL TABLE TOP—INLAID WITH VARIOUS MARBLES, ENGLISH AND FOREIGN.

G. Mitchell Mason, Walton Street, Brompton, S.W.

Section C.

SLATE.

Specimens of Slate, Roofing Slates, and various Applications of Slate.

Note.—Slates from the quarries of Easdale, &c., in Argyllshire. The Easdale and other quarries of Argyllshire, which have been worked for upwards of three centuries, employ about 200 men and boys, and export about 10,000,000 of slates annually, in about 300 vessels. The slates are not obtained generally in very large slabs, but most of the quarries supply a fair proportion of the larger kinds used for roofing, and measuring 2 feet by 12 inches (Duchesses). They are worked in Easdale, Seil, and other small islands of clay slate, a little south of Oban, and near the large island of Oura. The quarries are of various dimensions; that of Ellenabeich being 300 feet long, 100 feet deep, and 150 feet broad, the quality improving in the depth. The other quarries are smaller; but those of Easdale are very valuable, and the quality excellent. The stratification of the beds of slate rocks is very much disturbed; but the cleavage is invariable, running N.E. and S.W., and dipping 50°.

No. 1 C.

Specimens of Slate.

Old Delabole Slate Company.—1851.

Note.—The magnificent quarries of Delabole have been opened for at least three centuries, and have supplied a large quantity of excellent slate. They are worked in the Devonian slates, near Tintagel, where they are chiefly shipped. The quality is good, combining lightness with strength, and resisting exposure perfectly. This slate is used not only for roofing, but also in large slabs for various purposes.

No. 2 C.

Specimens of Roofing Slate.

Various large size Slates, Slate Ridges, &c.

Old Delabole Slate Company.—1851.

Note.—The following are some of the sizes of the roofing slates:—Queens, 36 × 22, 36 × 18, 30 × 15 inches; Princesses, 24 × 14, 24 × 12; Marchionesses, 22 × 12; Ladies, 16 × 8; Small Ladies, 14 × 8.

No. 3 C.

Specimens of Roofing Slates.

All sizes.

The Welsh Slate Company, Festiniog, Merionethshire; and 1, New Boswell Court, Lincoln's Inn, London, W.C. *See* Advertisement.

NOTE.—The following are the sizes and names of the slates shipped at Port Madoc by this Company; those marked * are exhibited:—* Queens, 36 × 20, 32 × 20, 30 × 20, 28 × 15 inches; * Princesses, 24 × 14; * Imperials, 27 × 14½; Duchesses, 24 × 12; Small Duchesses, 22 × 12; * Marchionesses, 22 × 11; Countesses, 20 × 10; Wide Viscountesses, 18 × 10; Viscountesses, 18 × 9; * Wide Ladies, 16 × 10; Ladies, 16½ × 8½; * Small Ladies, 14 × 8; Small Ladies, 14 × 7; Large Doubles, 13 × 7; * Doubles, 13 × 6½; Headers, 14 × 12; Headers, 14 × 10 inches. There is a second quality of these slates; Princesses, Duchesses, Small Duchesses, Countesses, Wide Viscountesses, Wide Ladies, Ladies, and Small Ladies.

No. 4 c.

SPECIMENS OF BLUE ROOFING SLATES.

In sizes.

The Bangor Slate Company, Brynhafod-y-Wern Quarries, Bangor, North Wales.

NOTE.—The following are the sizes exhibited:—Duchesses, 24 × 12 inches; Viscountesses, 18 × 9; Ladies, 16 × 8; Small Ladies, 14 × 8; Large Doubles, 13 × 7 inches.

No. 5 c.

SPECIMENS OF GREEN ROOFING SLATES.

In sizes. Various shades of green colour.

The Bangor Slate Company, Brynhafod-y-Wern Quarries, Bangor.

NOTE.—The following are the sizes:—Duchesses, 24 × 12 inches; Small Duchesses, 22 × 12; Countesses, 20 × 10; Viscountesses, 18 × 9; Wide Viscountesses, 18 × 10; Ladies, 16 × 8; Small Ladies, 14 × 8; Doubles, 12 × 6 inches.

No. 6 c.

SPECIMENS OF MOTTLED ROOFING SLATES.

In sizes. Blue and green mottle.

The Bangor Slate Company, Brynhafod-y-Wern Quarries, Bangor. (*See* Advertisement.)

NOTE.—The sizes exhibited are:—Duchesses, 24 × 12; Viscountesses, 18 × 9; Wide Viscountesses, 18 × 10; Ladies, 16 × 9; Wide Ladies, 16 × 10; Small Ladies, 14 × 8; Doubles, 13 × 7 inches.

No. 6 a c.

SPECIMENS OF ROOFING SLATES.—1851.

J. W. Greaves, Port Madoc, Carnarvon.

NOTE.—The sizes include Queens, Princesses, Ladies, &c.

No. 7 C.

SPECIMENS OF WHITE AND BLUE ROOFING SLATES.—SCOTLAND.

Alexander Mitchell, Bridge End, Lethnot, Brechin, N.B.

NOTE.—These blue and grey slates run of the following sizes:—16 × 10, 16 × 8, 14 × 8, 13 × 7 inches.

No. 8 C.

MISCELLANEOUS ROOFING SLATES.

No. 9 C.

MODELS OF SLATED ROOFS. Showing various patterns of slating.

G. F. North, Slate Merchant, Palace Road, Lambeth.

No. 10 C.

MODELS OF THE SLATE ROOF OF THE PORTICO, COVENT GARDEN THEATRE.

G. F. North, Slate Merchant, Palace Road, Lambeth.

No. 11 C.

MODELS OF THE SLATING ON THE MAIN ROOF OF COVENT GARDEN THEATRE, AND OF THE HOUSES OF PARLIAMENT, WESTMINSTER.

G. F. North, Slate Merchant, Palace Road, Lambeth.

No. 12 C.

MODEL OF A SLATE RIDGE.

G. F. North, Slate Merchant, Palace Road, Lambeth.

No. 13 C.

SPECIMENS OF SLATE RIDGES.

D. Williams, The General Slate Works, Bangor.—1851.

No. 14 C.

SLATE BRICK.—Made from the waste of a slate quarry.

J. Pym, Inventor.—1851.

No. 15 C.

SLATE CLOCK DIAL.

G. F. North, Slate Merchant, Palace Road, Lambeth.

No. 16 c.

SPECIMENS OF ENAMELLED SLATE.

G. E. Magnus, Pimlico Slate Works, Pimlico, S.W.

No. 17 c.

CHIMNEY PIECE.—ENAMELLED SLATE.

G. E. Magnus, Pimlico Slate Works, Upper Belgrave Place, Pimlico, S.W.

No. 18 c.

PEDESTAL.—ENAMELLED SLATE.

G. E. Magnus, Pimlico Slate Works, Upper Belgrave Place, Pimlico, S.W.

NOTE.—It is manifest that good and lasting imitations of the finer marbles, executed in slate, &c., are calculated to add to the advantages that arise from the employment of ornamental work in furniture and decoration. Mr. Magnus, of Pimlico, whose works can be described as extremely remarkable, and worthy of detailed notice, has, by means of a new, very simple, and inexpensive process, succeeded in producing works of great magnitude and importance, calculated to effect the introduction of slate for household purposes, on a very extensive scale. The advantages of the material as thus used, consist in its great strength, its lightness, as compared with that of marble, and its adaptability to all kinds of artistic decoration, at a small cost.

With regard to the strength of slate, it is computed to be about four times that of ordinary stone, and slabs 8 feet long and upwards, can be very safely used, of thicknesses not exceeding half an inch.

The extreme compactness of the material, and its perfect non-absorbent qualities, render it well adapted as a lining for walls, where it may be placed without even plastering. In this respect it is preferable to any kind of cement. In the decoration the exact method of laying on the colour is not communicated; but the slate, after being coloured, is exposed for several days to a temperature of from 300° to 500° Fahr., and the colours are thus rendered so permanent that washstand tops, and other articles used in hotels for years, have been scarcely injured by wear. In respect also of its peculiar smooth and perfect surface and fine texture, it is admirably adapted for various ornamental and useful purposes; and grooves, mouldings, &c., are run with great despatch, and at small cost, by steam power.

In point of execution, both mechanical and artistic, the greatest possible credit is due to this exhibitor. He has produced a vast variety of articles, many of which are now in common use; and, in all, the price is so very much less than that of the substance imitated, and even of any other imitation that can at all compete with it, as to ensure a large and permanent demand from the public.

No. 19 c.

SPECIMENS OF ENAMELLED SLATE.

Thomas Fry, Enamelled Slate Works, Pudsey Street, Liverpool.

No. 20 c.

CHIMNEY PIECE.—ENAMELLED SLATE.

Imitations of black marble and serpentine.

Thomas Fry, Enamelled Slate Works, Pudsey Street, Liverpool. London agent, Mr. Pellatt, 17, Lower Calthorpe Street, Gray's Inn Road. Price *6l. 6s.*

No. 21 c.

SMALL MODEL OF A SLATE MANGER FOR STABLES.

Thomas Fry, Enamelled Slate Works, Pudsey Street, Liverpool.

No. 22 c.

SPECIMEN OF SLATE.

Large Circular Slab.

From Turkey.—1851.

Section D.

CEMENTS, PLASTERS, &c.

Cement and its Application.

Note.—When common limestone of any kind, unmixed with other mineral substance, is exposed to considerable heat, it changes its appearance and character, swelling out, and passing into a white powdery material, greedily absorbing water with the evolution of much heat, and known under the name of quick lime. If a paste is made with this lime and water, and the mass be exposed to the air, the result is a loose and friable hydrate of lime; but if a thin bed of such paste is interposed between two porous stones or bricks, the water is absorbed into these substances, and the thin bed of hydrate of lime that remains takes the consistence of stone, and adheres strongly to the two surfaces with which it is in contact. This is assisted by mixing the paste with sand and gravel, to the extent of two or three times its own weight, since the adhesion is greater to the foreign substances than to the particle of the hydrate of lime itself. Such a mixture is the common mortar used by masons and bricklayers, and as it only hardens after exposure for some time in dry air, it is not surprising that in damp places it sets with great difficulty, and in water has no tendency to consolidate at all. When it is required to fasten stones and bricks together in moist places or under water, another substance is needed, and this is called hydraulic lime, or hydraulic cement. There are, however, many kinds of hydraulic lime. The simplest is obtained when about 10 or 15 per cent. of clay (silicate of alumina) is combined with the original limestone, and when the calcination is not carried too far. In this case the resulting lime solidifies under water, the hydrate of lime combining with the silicates of alumina and lime, and producing a new substance insoluble in water.

No. 1 D.

Sample of Scott's Patent Cement.

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

Note.—The process of manufacturing it was discovered and patented by Captain Scott, of the Royal Engineers, Superintendent of Instruction in Chemistry and other studies, at the Royal Engineers' Establishment, Chatham, and from him takes the name of Scott's Patent Cement.

No. 2 D.

Sample of Portland Cement.

Lee, Son, and Smith, Earl Street, Blackfriars.

Note.—Portland cement is formed by calcining together limestone and some argillaceous earth, the result being a mass which rapidly absorbs a cer-

tain quantity of water, and then becomes solid, as a hydrous silicate of lime. The advantages over natural hydraulic limes consist generally of greater hardness and durability, arising from the mixture of material being more perfectly under command.

No. 3 D.

SAMPLE.—PORTLAND CEMENT.

J. M. Blashfield, 377, Oxford Street, W.C., and Stamford, Lincolnshire.

No. 4 D.

SAMPLE.—PORTLAND CEMENT.

J. C. Part, 186, Drury Lane, London, W.C.

No. 5 D.

SAMPLE.—ROMAN CEMENT.

J. M. Blashfield, 377, Oxford Street, W.C., and Stamford, Lincolnshire.

NOTE.—Roman or Parker's cement is made in England from nodules of calcareous matter, collected in bands in the London clay of Sheppey and Harwich, the Oxford and Kimmeridge clays (chiefly from Weymouth), and other similar deposits. Sometimes (especially in the former case) these have been washed out to sea and are there dredged up. The so-called Medina cement is of this kind, but of lighter colour, and is made from the Hampshire septaria. A large quantity of excellent hydraulic mortar is also made from the lias (known as Atkinson's or Mulgrave cement), and from some other rocks. The price of Roman cement is about from 30*s*. to 40*s*. per ton, and upwards of two millions of bushels are annually made from the material obtained from the Essex coast, near Harwich.

No. 6 D.

SAMPLE.—ROMAN CEMENT.

J. C. Part, 186, Drury Lane, London, W.C.

NOTE.—Ancient Romans paid particular attention to their cements and mortars, the durability of which is attested by the remains of their walls. Their renowned hydraulic cement is said to have been prepared with a mixture of volcanic sand and lime. Hydraulic cements are such as have the property of hardening under water, and are prepared by the calcination of argillaceous limestone or with mixture of lime and argillaceous earth. It appears from the acute researches of M. Vicat, that silica is an essential element in the formation of a good hydraulic cement, the setting of which he attributes to the basis, silicate of lime, passing to the state of hydrate by the absorption of water; for he found that alumina and magnesia did not give to lime the property of hardening under water, although they do not prevent the process of induration. He believes that the oxides of iron and manganese do not contribute in any way to the goodness of the cement.

No. 7 D.

SAMPLES.—MARTIN'S CEMENT.

J. C. Part, 186, Drury Lane, London. *See* Advertisement.

NOTE.—Sulphate of lime is the basis of all the cements known as Keen's, Martin's, Parian, and some others; but in these the plaster in the state of fine powder, is thrown into a vessel containing a saturated solution of alum, sulphate of potash, or borax. After soaking for some hours it is removed and air-dried, and subsequently rebaked at a brownish red heat. When taken out of the oven it is once more reduced to a fine powder and carefully sifted, after which it is fit for use, but when slacked a solution of alum is employed instead of pure water. When borax is used the plaster is called Parian, but in the other case it forms Keen's cement. The kind called Martin's cement is made with pearlash as well as alum, and is baked at a much higher heat than the rest.

No. 8 D.

PEDESTAL SHOWING VARIOUS SAMPLES.—MARTIN'S CEMENT.

J. C. Part, 186, Drury Lane, London, W.C.

No. 8a D.

SAMPLE.—SCOTT'S PATENT CEMENT.

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

No. 9 D.

SPECIMENS.—SCOTT'S PATENT CEMENT (gauged nett).

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

No. 10 D.

SPECIMEN.—SCOTT'S PATENT CEMENT.

(Gauged with three parts sand.)

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

No. 11 D.

SPECIMEN.—SCOTT'S PATENT CEMENT.

(Gauged with four parts sand.)

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

No. 12 D.

SPECIMENS.—SCOTT'S PATENT CEMENT (gauged nett).

Applied to ornamental purposes.

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

No. 13 D.

TRIAL BLOCKS.—PORTLAND CEMENT.—See table of weights.

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

No. 14 D.

CONCRETE BLOCKS IN PORTLAND AND OTHER CEMENT, &c.—1851.

No. 15 D.

SPECIMEN OF CONCRETE OF MEDINA CEMENT.

(A modification of Roman.)

The cost of this by the sea-side, where shingle can be readily had, would not exceed 6*d.* per foot cube.

No. 16 D.

ORNAMENTAL BLOCKS OF CONCRETE FOR BUILDING.

J. Norris, Builder, 34, Albion Street, Reading.

No. 17 D.

PORTION OF A BALUSTRADE, INCLUDING PLINTH, CENTRE, AND TOP COPING.—CONCRETE.

J. Norris, 34, Albion Street, Reading.

No. 18 D.

SEWER PIPES.—CONCRETE.

1. 9 in. diameter and 2 feet long.

1 oval pipe, 40 × 21½ inches.

J. Norris, 34, Albion Street, Reading.

No. 19 D.

BUILDING BRICKS.—CONCRETE.

J. Norris, 34, Albion Street, Reading.

NOTE.—A house at Reading has just been built by Mr. Norris with these bricks; and the cost of producing them is about 28*s.* per 1,000.

No. 20 D.

RIDGE TILE, OF CONCRETE.

J. Norris, 34, Albion Street, Reading.

NOTE.—These concrete blocks, &c. are cast in moulds, and can be made to any required form and size.

The balustrade, per foot run complete, costs 3*s.* 6*d.*

The 9-inch drain pipe is 1*s.* 6*d.* per yard.

The 40-inch oval drain pipe is 5*s.* per yard.

The ridge tile, 5*d.* each; made to any shape.

4½-inch wall coping, 1*s.* 6*d.* per yard.

9-inch Do. 2*s.* 6*d.* per yard.

Garden vases and pedestals and similar ornamental objects are also made of this concrete.

The building bricks are 28*s.* per 1,000, and any description of moulded bricks or blocks for ornamental work can be made to order.

No. 21 D.

MODEL FOR A DRINKING FOUNTAIN (Portland cement).

Cast by D. Brucciani, from an Italian original in terra cotta.—15th century.

NOTE.—It has already been said that Portland cement is a hydraulic mortar, made of a mixture of chalk and a peculiar river silt. In working, it is sometimes mixed with sand and even with broken brick, forming a kind of concrete of extraordinary strength. It receives its name from its peculiar colour, which approaches that of Portland stone, and not from being made from that stone, or in any way obtained from the Isle of Portland. Its hardness is very great, and it may be used with advantage, not only as a cement, but in many cases where ordinary stone is generally employed.

No. 22 D.

NYMPH IN CEMENT.

J. Bowen, Bridgwater.—1851.

No. 23 D.

VARIOUS SAMPLES.—PATENT METALLIC MORTAR.

For building, pointing, and stucco work.

Manufactured by W. Reynolds, 43, Trippet Street, Sheffield.

NOTE.—This metallic mortar, manufactured by Mr. W. Reynolds, Builder, at Sheffield, is exhibited in its simple calcined state in tins, and also in blocks, set.

Tin, No. 1, contains metallic mortar applicable for pointing old buildings, &c. There is a small block of the same, when set, shewing its hardness and strength. Price, 9*s.* per ton.

Tin, No. 2, contains mortar for skimming or finishing coats, and for inside or outside plastering or stucco work. Colour can be introduced into it, so as to get a darker or lighter shade. Price, 21*s.* per ton.

There are sample blocks of this material also, when set.

Tin, No. 4. Sample of metallic mortar for ordinary brick laying, and general building purposes. Price, 6*s.* 6*d.* per ton. Blocks of this mortar when set are also exhibited.

Tin, No. 7. Rough stucco mortar for outside use. Price 9*s.* per ton. This should have a finishing coat of the metallic skimming or plaster mortar, shewn in Tin, No. 2. Price, 9*s.* per ton. Blocks of this mortar when set, are exhibited.

Blocks, Nos. 5 and 6 are samples of metallic plaster for inside use, the former for plastering walls, the latter for ceilings.

No. 24 D.

Illustrations of Experiments for Colouring Cements for Internal Wall Decorations.

Note.—These experiments were conducted at the Science and Art Department, with a view of obtaining permanent colours in cements for decoration. The cements used are Keene's and Martin's, and the colours being embodied with the cement, and not painted on the surface, are strictly permanent, and capable of revival at pleasure.

No. 25 D.

Imitations of Italian Puzzolana Work for Floors.

Note.—These imitations illustrate a cheap kind of flooring in constant use in Italy; and being simply refuse pieces of various marbles, bedded and grouted in cement, and afterwards polished, the cost of a similar application in this country would be but trifling.

No. 26 D.

Miscellaneous Bricks and Blocks of Cement.

Experiments on Portland and Roman Cements, Stones, Bricks, &c.

The following experiments on Portland and Roman cements, Portland stone, hard stock bricks, and hollow bricks, &c., were made at the Great Exhibition on the 20th, 22nd, 23rd, and 24th September 1851, (in the presence of Sir C. Pasley and some other gentlemen,) the weights used throughout were iron pigs, estimated at 100 lbs. each :—

1. A block of neat Portland cement, 16 inches long, and having a sectional area of 16 inches (4 inches square), was suspended from each end, and the weight applied exactly in the centre. The block had been made four months. It broke at 1,580 lbs., including the weight of the scale (estimated at 80 lbs.) The fracture was perpendicular, even, and good.

2. An exactly similar block of neat Roman cement, made from Harwich stone, and seven weeks old, broke at 380 lbs. This must have been a bad sample of the material.

3. A similar block of neat Sheppey cement, made in the month of May, broke at 980 lbs.

4. A block of neat Portland cement, having a sectional area, measuring $2\frac{3}{4}$ inches by 2 inches, made 31st March, was pulled asunder with the fracture, as shown at the top, at 2,280 lbs.

5. A block of Portland stone, having the same sectional area, and in all respects resembling the above, broke at 1,480 lbs. The fracture showed no flaw in the stone, which was of even grain and good quality.

6. Two blocks of Portland stone, being 6-inch cubes, had been cemented with about one-eighth of an inch thick of Portland cement, about four months before the experiment. The upper stone being held by iron clippers, the weights were suspended from the lower one, the depth of the holes for the clippers being five-eighths of an inch. When the weight amounted to 3,780 lbs., the former broke. The square holes for the clippers being made deeper in another part of the stone, and the scale being once more loaded, the iron hook by which the scale was suspended broke at 4,580 lbs., the cement still remaining perfectly sound. In this experiment, therefore, the strength of the cement was not absolutely tested.

7. Two similar blocks of Portland stone, joined together with Roman cement, the thickness of the joint being a quarter of an inch, and the age five months, were separated by 2,780 lbs. The cement in this case left the stone partly on the upper and partly on the lower surface, showing that the adhesive force of the cement was greater than the cohesion. It was estimated that Roman cement, under such circumstances, would separate at under 1,000 lbs.

8. Five hard stock bricks were taken, cemented together with a mixture consisting of one half Portland cement and one half sand. They were suspended from the upper brick, and the scale was attached to the lower. The fracture took place at 2,580 lbs., at the top brick.

9. Another experiment consisted in breaking down a beam constructed of ten courses of hollow bricks cemented together, the upper part having three courses on edge and four flatwise, and the lower part two courses on edge and one flatwise. They were fastened with Portland cement and strengthened by lengths of hoop-iron, a number of which, amounting to fifteen, were inserted. The iron measured $1\frac{1}{2}$ inch by $\frac{1}{16}$th nearly. The following are the dimensions of the beam :—

	Feet.	Inches.
Total length - - - - -	24	4
Length between bearings - - -	21	4
Depth - - - - - -	4	6
Thickness at bottom - - - -	2	3
„ top - - - -	1	6

	Lbs.
It was built of 1,200 hollow bricks, weighing	10,750
32 bushels cement „ }	6,400
32 „ sand „ }	
Total weight of beam - -	17,150

	Lbs.
Weight of stone at the top of the beam -	672
„ attached scale - - -	1,792
„ suspended portion of beam - -	15,000
Total suspended weight - -	17,464

It may be well to state, that if built of common bricks and fastened with Roman cement and sand, the net weight of the beam, including scale and stone, would have been 21,207 lbs., being a difference of 3,743 lbs., resulting from the use of hollow bricks.

On the other hand, it appears that the actual area of cemented surface is only 700 square inches, instead of 1,060, which it would have been if solid bricks had been employed; for it appears that the actual sectional area of the bricks is $5\frac{5}{8}$ by $4\frac{1}{8}$ inches, the rims or sides being $\frac{7}{8}$ inch, so that the hollow part may be estimated at 9 square inches. There are in all 40 vacuities, and we thus have—

	Inches.	Sq. inches.
Six uppermost courses, measuring in sectional area -	$36 \times 17 \cdot 25 =$	621
Three lower courses, measuring in sectional area -	$16 \times 26 \cdot 6 =$	439
		1,060
Deduct spaces $= 40 \times 9$ - - - -	=	360
Total sectional area cemented - - - -		700

The depth of the beam being $52\frac{1}{2}$ inches, we thus have, as a measure of the strength of the beam, $700 \times 52\frac{1}{2} = 36{,}750$.

One object in the peculiar form and proportions of this beam was to institute a comparison between the strength of Roman and Portland cement, a similar beam having been constructed in 1837, at Nine Elms, by Messrs. Francis and White, at the suggestion of Mr. Brunel, the bricks in which were, however, common stock bricks, bonded in the usual manner, and bedded and grouted with a mixture of equal parts of the best Roman cement and clean Thames sand. In this beam there were nineteen courses, the thirteen uppermost being two bricks thick, and the six lower ones two and a half; the sectional area being 1,107 superficial inches, and there were inserted fifteen lengths of hoop iron $1\frac{1}{2}$ inch by $\frac{1}{16}$th. The beam was borne on two piers, leaving a clear bearing of 21 feet 4 inches; and after it had been built about three months it was loaded with 11,200 lbs. of pig iron, placed on a platform suspended from the central part of the beam. At the end of another three months the weight was increased to 24,000 lbs. After twelve months it was broken down by increasing the weight to 50,622 lbs.

The depth of this beam being 57 inches, the measure of its strength, compared with that of the other, is 1,107 × 57 = 63,099, and since 63,099 : 36,750 :: 50,650 : 29,500, it is considered by the exhibitors that the breaking weight of their beam, if in Portland cement, ought to have been 29,500 lbs.

A small piece of neat Portland cement, exposing a surface of 1½ inch by 1 inch, and six months old, withstood a pressure of 40,320 lbs.; while a piece of Portland stone of the same size crushed at 2,576 lbs.

PLASTERS.

Plaster and its Application.

No. 28 D.

SAMPLE.—SCOTT'S PATENT PLASTER.

Manufactured by Lee, Son, and Smith, Earl Street, Blackfriars.

NOTE.—The process of manufacturing it was discovered and patented by Captain Scott, of the Royal Engineers, Superintendent of Instruction in Chemistry and other studies, at the Royal Engineers' Establishment, Chatham, and from him takes the name of Scott's Patent Plaster.

No. 29 D.

SAMPLE.—PLASTER OF PARIS.

J. M. Blashfield, 377, Oxford Street, W.C., and Stamford, Lincolnshire.

No. 30 D.

SAMPLE.—PLASTER OF PARIS.

J. C. Part, 186, Drury Lane, London.

No. 31 D.

SPECIMEN.—PLASTIC FIREPROOF COMPOUND ARCH.

C. C. and A. Dennett, Nottingham.—*See* Sec. M., No. 47.

No. 32 D.

SPECIMENS.—PATENT STAMPED OR INCISED STUCCO.

H. Worrall, Stucco Works, Mansfield Road, Gordon Lane, Kentish Town, N.

No. 33 D.

MODEL FOR A DRINKING FOUNTAIN.

In Plaster of Paris, Cast by D. Brucciani, from an original in terra cotta. Italian, 15th century.

No. 34 D.

SPECIMEN OF PLASTER BACKED WITH CLOTH.

Being a portion of the frieze, or front of boxes, grand tier, at Covent Garden Theatre, used for architectural decorations by Mr. Owen Jones, and executed by M. De Sachy, 62½, Berwick Street, Soho, W. The weight of the length of 13 feet, is only 87 lbs.

No. 35 D.

SPECIMEN OF A MODE OF CASTING IN PLASTER BACKED WITH CLOTH.

Used for architectural decorations by Mr. Owen Jones, and executed by M. De Sachy, 62½, Berwick Street, Soho, W. The figure ("The Venus di Milo") weighs only 50 lbs.

No. 36 D.

SPECIMENS.—PATENT METALLIC PLASTER MORTAR.

For inside work, ceilings, &c.

Manufactured by W. Reynolds, 43, Trippet Street, Sheffield.

NOTE.—*See* No. 23 D.

Section E.

BRICKS.

Common, Machine-made Bricks, Moulded Bricks, Glazed Bricks, and Paving Bricks.

No. 1 E.

Malms, Yellow Seconds, Pickings, Cutters, and Black Bricks.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 2 E.

Malms, Yellow Seconds, Pickings, and Cutters.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London.

No. 3 E.

Rubbers, Red and White.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London.

No. 4 E.

Rubbers, Red, White, and Black.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 5 E.

Suffolk Bricks, Red and White.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 6 E.

Suffolk Bricks, Red and White.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London.

No. 7 E.

Suffolk Bricks, Chilton, Red and White.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London.

No. 8 E.

White and Buff Bricks.

The Dippenhall Brick and Tile Works, Farnham Surrey; E. Whalley, Manager.

No. 9 E.

BUILDING BLOCKS, OF SILICA ROCK CLAY FOUND NEAR FARNHAM, SURREY.—Moulded for Window Sills and Mullions, &c., in imitation of Stone Work.

The Dippenhall Brick and Tile Works, Farnham, Surrey.

No. 10 E.

SPECIMEN of SILICA BRICKS, WHITE AND BUFF.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 11 E.

FAREHAM BRICKS, REDS.

Facing, cutting, and building bricks.

W. Cawte, Maker, Furze Hall Brick Yard, Fareham, Hants.

No. 12 E.

WHITE BRICKS.

John Ambrose, Copford, near Colchester, Essex.—1851.

No. 13 E.

WHITE BRICKS.

Fayle and Co., Poole, Dorset.

No. 14 E.

TERRA-METALLIC BRICKS.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 15 E.

TERRA-METALLIC BRICKS.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London, S.

No. 16 E.

TERRA-METALLIC BRICKS.

Garrett, Brothers, Burslem, and 15, South Wharf, Paddington.

No. 17 E.

TERRA-METALLIC BRICKS.

Thomas Peake, Tileries, Tunstall, Stafford, and 21 Wharf, City Road Basin. *See* Advertisement.

No. 18 E.

COMPRESSED BRICKS, BURNT AND UNBURNT.

Platt, Brothers, and Co., Hartford Iron Works, Oldham, Manchester.

No. 19 E.

COMPRESSED BRICKS.

Henry Clayton and Co., Atlas Works, near Dorset Square, Regent's Park, London, N.W

No. 20 E.

COMPRESSED BRICKS, Belbro' Clay.

W. B. Mitchell, Mineral Surveyor, Sheffield.—1851.

No. 21 E.

PATENT COMPRESSED BRICKS AND BLOCKS, FOR BUILDING.

Bodmer, Brothers, Inventors and Makers, 2, Thavies Inn, Holborn.

NOTE.—These compressed bricks have been used for house-building, with great success, at Newport, Monmouthshire. Their price averages that of ordinary good building bricks.

No. 22 E.

MISCELLANEOUS BRICKS.

Common Stocks, &c.

No. 23 E.

BRICKS FROM AUSTRIA.

Alois Miesbach, Vienna.—1851.

NOTE.—This manufacturer has seven brick manufactories, giving direct employment to 4,880 persons, and producing annually 107 million bricks and tiles. His establishment at Inzersdorf, on the Wiener Berg, is the largest in the world; it covers 265 English acres, has 24,930 feet in length of drying sheds, 8,304 feet in length of moulding sheds, 446 moulding benches, 43 kilns capable of burning together 3,510,000 bricks at one time, five artesian wells, stabling for 300 horses, blacksmith's, carpenter's, and wheelwright's shops, besides an infant school for 120 children, and a hospital with 52 beds; it employs 2,890 persons, and turns out annually 65,500,000 bricks and tiles; 680 English acres of land supply a first-rate material for the manufacture, and contain sufficient for several centuries. The other six factories are provided on the same scale.

Bricks and Lumps, for Wall Copings.

No. 24 E.

COPING BRICKS, RED AND WHITE; ROUND AND SADDLE-BACK.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 25 E.

SUFFOLK COPING BRICKS, RED AND WHITE; ROUND AND SADDLE-BACK.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London. *See* Advertisement.

No. 26 E.

SUFFOLK COPING BRICKS, CHILTON, RED AND WHITE; ROUND AND SADDLE-BACK.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 27 E.

SUFFOLK COPINGS, SADDLE-BACK, RED AND WHITE.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 28 E.

COPING BRICKS, ROUND AND SADDLE-BACK, WHITE.

John Ambrose, Copford, near Colchester, Essex.—1851.

No. 29 E.

WALL COPING LUMPS, WHITE.

John Ambrose, Copford, near Colchester, Essex.—1851.

No. 30 E.

WALL COPING LUMPS,—TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 31 E.

WALL COPING LUMPS,—FIRE CLAY.

Joseph Pease, Darlington.—1851.

No. 32 E.

WALL COPING,—FIRE CLAY.

The Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford.

Hollow Bricks.

No. 33 E.

PERFORATED BRICKS, WHITE.

J. Beart, 15, Great Northern Wharf, King's Cross, N.

No. 34 E.

STONEWARE, PERFORATED BRICKS, Glazed and Unglazed.
For ventilating Air-shafts, in Buildings.

George Jennings, Holland Street, Blackfriars Road, London, S.

No. 35 E.

PERFORATED GRATINGS, STONEWARE, Glazed and Unglazed.
For ventilating Air-shafts, in Buildings.

George Jennings, Holland Street, Blackfriars Road, London, S.

No. 36 E.

SEMI-PERFORATED BRICKS.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster, S.W.

No. 37 E.

COMPRESSED PERFORATED BRICKS.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 38 E.

HOLLOW BRICK OR TUBE.

Manufactured at the yard of his Grace the Duke of Richmond, 1849, to illustrate a method of construction devised by John Elliott, Architect, 270, High Holborn, E.C.

No. 39 E.

HOLLOW BRICKS, for partition walls.
9 inches long, 6 inches wide, and 4 inches thick.

The Aylesford Pottery Company, Aylesford, Kent.
Agent, Henry Pilton, Belvedere Road, Lambeth, S.

No. 40 E.

HOLLOW BRICKS, for partition walls.

Invented by Lewis Vulliamy, Esq., 1, Duncannon Street, Strand; and manufactured by J. M. Blashfield, Stamford.

NOTE.—This form of brick was used in the partition walls of Dorchester House, Park Lane.

No. 41 E.

HOLLOW CORNICE TUBES, various lengths. 18, 24, 32, and 36 inches long, and 2 and 3 inches in thickness.

The Aylesford Pottery Company, Aylesford, Kent.
Agent, Henry Pilton, Belvedere Road, Lambeth.

No. 42 E.

FLAT HOLLOW TILES, various sizes. Square 9 × 9 inch; 14 and 18 inches long × 9 inches wide; 2 inches deep.

The Aylesford Pottery Company, Aylesford, Kent.
Agent, Henry Pilton, Aylesford Pottery Wharf, Belvedere Road, Lambeth.

No. 43 E.

COLLECTION OF HOLLOW BRICKS, CORNICE MOULDINGS, WINDOW SILLS, &c.

Contributed by Henry Roberts, 31, Princes Square, Kensington, S.W.

No. 44 E.

MISCELLANEOUS HOLLOW BRICKS.

No. 45 E.

HOLLOW BRICKS,—FRENCH.

From the Paris Universal Exhibition of 1855.

M. Paul Borie's (Paris) hollow brick, which are now so largely employed in all constructions in Paris. They are made of six different dimensions, to suit the various uses to which they may be put, viz.:—

No.	Length.	Breadth.	Thickness.	Weight of each.	Price per 1,000 delivered in Paris.
	Inches.	Inches.	Inches.	lbs.	*s.*
1	$8\frac{3}{4}$	6	$1\frac{1}{2}$	2·8	48
2	$8\frac{3}{4}$	$4\frac{3}{8}$	2	2·9	48
3	$8\frac{3}{4}$	$4\frac{3}{8}$	$2\frac{3}{4}$	2·9	48
4	$8\frac{3}{4}$	$4\frac{3}{8}$	$4\frac{3}{8}$	5·4	80
5	$8\frac{3}{4}$	$4\frac{3}{8}$	$4\frac{3}{8}$	5·4	80
6	$8\frac{3}{4}$	$5\frac{1}{2}$	$3\frac{1}{4}$	5·4	80

These bricks differ from the hollow bricks that are in use in England in the form and extent of their perforations or hollows. Those that have appeared in this country being generally pierced with a number of small

round holes in a transverse direction; and M. Borie, on the other hand, constructing his with one or more rows of square openings running from end to end of the brick, and so disposed that every part of the skeleton, as it might be called, into which the brick is thus divided, is precisely of the same thickness, and that, consequently, there is no tendency to shrink in one part more than another, and that all parts are equally burnt, and the brick of equal strength throughout. They are made of very fine clay, and are said to be stronger than solid bricks. These hollow bricks are used not only for brickwork in walls, but also on edge in partitions, similarly to those of M. Chaudet; and the principle is also carried into the manufacture of a hollow brick beam $4\frac{3}{8}$ inches wide, and 2 inches deep, pierced with two longitudinal openings, its sectional area being 4·2 square inches; this beam was loaded during the whole time of the Exhibition with a weight of 220 lbs. on its centre, the extremities being supported on bearings 3 feet 9 inches apart. Another of these long bricks or lintels, measuring $4\frac{3}{8}$ inches wide by $2\frac{3}{4}$ inches deep, with a solid sectional area of not more than 5·2 square inches, bore with the same bearings, viz., 3 feet 9 inches between the supports, a weight of 440 lbs. on its centre.

Lintels for doors and windows, made by M. Borie of brick clay, and perforated with longitudinal openings, the same as in his bricks.

No. 46 E.

HOLLOW BRICKS,—FRENCH, for partition walls, &c.

From the Paris Universal Exhibition of 1855. Messrs. Chaudet and Son, Paris, 6 and 8, Avenue des Triomphes.

These are hollow bricks of a peculiar form for making partitions, ceilings, flues, &c.; they are about 9 inches by 7 inches, and $1\frac{1}{2}$ inches in thickness, each brick having a projection at one end which fits into a groove in the end of the next.

No. 47 E.

MISCELLANEOUS HOLLOW BRICKS,—FRENCH.

From the Paris Universal Exhibition of 1855.

NOTE.—Hollow bricks may be made with any good tile machine, in the same manner as ordinary draining pipes, and at about the same cost, in proportion to the quantity of clay contained in them. They are more compressed, require less drying, and with much less fuel are better burned than ordinary bricks, even when only waste heat, or that in the upper part of the kiln, is used.

Glazed Bricks.

No. 48 E.

STOCKS, WITH GLAZED HEADS.

J. and W. Eastwood, Belvedere Road, Lambeth, S.

No. 49 E.

GLAZED BRICKS,—VARIOUS COLOURS.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster, S.W.

No. 50 E.

RED GLAZED BRICKS. For archwork, &c.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster.

No. 51 E.

ENAMELLED AND GLAZED BRICKS,—VARIOUS COLOURS. For bonding with brickwork.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 52 E.

GLAZED SLIPS,—VARIOUS COLOURS. For facing brickwork.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 53 E.

ENAMELLED AND GLAZED MAJOLICA BRICKWORK.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

Moulded Bricks.

No. 54 E.

RUBBERS, RED AND WHITE.

J. and W. Eastwood, Belvedere Road, Lambeth, S.

No. 55 E.

ORNAMENTAL BRICKS AND BLOCKS, RED AND WHITE.

J. and W. Eastwood, Belvedere Road, Lambeth.

NOTE.—These bricks were made by Allen, Ballingdon, near Sudbury, Suffolk, for Messrs. Eastwood, and were used in the arcades of the Royal Horticultural Society's Gardens, South Kensington.

No. 56 E.

MOULDED BRICKS. For soffits of arches.

Used at Aldershot Camp.

No. 57 E.

MOULDED BRICKS, WHITE AND BUFF.

The Dippenhall Brick and Tile Works, Farnham, Surrey.
E. Whalley, Manager.

No. 58 E.

MOULDED BRICKS, RED. For various uses.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 59 E.

MOULDED BRICKS, RED. For various ornamental purposes.

James Luff, Tuddenham, Ipswich. *See* Advertisement.

No. 60 E.

MOULDINGS IN BRICK-CLAY, RED. For window mullions, &c.

James Luff, Tuddenham, Ipswich.

No. 61 E.

SPECIMENS OF MOULDED BRICKS, &c.

Forming ornamental palisades in the gardens of Hatfield House.

Presented by the Marquis of Salisbury, K.G., Hatfield, Herts.

No. 62 E.

SPECIMENS OF MOULDED AND ORNAMENTAL BRICKS, &c.

Used in the arcades of the new gardens of the Royal Horticultural Society at South Kensington.

NOTE.—These ornamental and moulded bricks were principally made by Messrs. R. and N. Norman, of St. John's Pottery, Burgess Hill, Sussex, and Allen, of Ballingdon, near Sudbury, Suffolk. By the former red bricks only, and by the latter red and white bricks were manufactured.

No. 63 E.

ORNAMENTAL BRICKS, RED AND BUFF COLOURS.

Lewis Tomson, Wisbeach, Cambridgeshire.

No. 64 E.

SPECIMENS OF CARVED BRICKWORK.—1851.

William Hurst, Builder, Hampton Court Palace.

No. 65 E.

ORNAMENTAL BRICKS, TERRA-METALLIC.

Joseph Arnold, The Leys, Tamworth.

No. 66 E.

TERRA-METALLIC CAPS AND MOULDINGS.

Joseph Arnold, The Leys, Tamworth.

No. 67 E.

TERRA-METALLIC LUMPS. For window sills.

Joseph Arnold, The Leys, Tamworth.

No. 68 E.

ORNAMENTAL LUMPS, TERRA-METALLIC.

Joseph Arnold, The Leys, Tamworth.

Moulded and Glazed Bricks for Ornamental Work.

No. 69 E.

BRICKS FOR WINDOW SILLS, &C., GLAZED AND MOULDED. BUFF COLOURS.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster.

No. 70 E.

BRICKS FOR ARCHWORK, CORNICE-WORK, &C., GLAZED AND MOULDED. BUFF COLOURS.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster.

No. 71 E.

BRICKS, MOULDED AND GLAZED, WITH PERFORATED BACKS. BUFF AND OTHER COLOURS, &C.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster.

No. 72 E.

ORNAMENTAL FACING BRICKS, GLAZED MAJOLICA WARE.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

Paving Bricks.

No. 74 E.

CLINKER PAVING BRICKS.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 75 E.

PAVING BRICKS.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 76 E.

YORKSHIRE PAVING BRICKS.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London. *See* Advertisement.

No. 77 E.

BRIMSTONE PAVIOURS,—SUFFOLK.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 78 E.

PAVING BRICKS, FAREHAM REDS.

W. Cawte, Maker, Furze Hall Brick Yard, Fareham, Hants.

No. 79 E.

PAVING BRICKS, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 80 E.

PAVING BRICKS, TERRA-METALLIC. For barn floors, &c.,

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 81 E.

PAVING BRICKS, TERRA-METALLIC.

Garrett, Brothers, Burslem; and 15, South Wharf, Paddington.

No. 82 E.

DUTCH PAVING CLINKERS.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 83 E.

TERRA-METALLIC CLINKERS.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 84 E.

DUTCH PAVING CLINKERS.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London. *See* Advertisement.

No. 85 E.

TERRA-METALLIC CLINKERS.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 86 E.

CLINKERS; RED, AND TERRA-METALLIC.

William Jones, Springfield Tile Works, Newcastle-under-Lyme.—1851.

No. 87 E.

ADAMANTINE.—PAVING CLINKERS; BUFF COLOURS.

The Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford. *See* Advertisement.

No. 88 E.

TERRA-METALLIC CLINKERS.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 89 E.

TERRA-METALLIC LUMPS. For paving.

Joseph Arnold, The Leys, Tamworth.

No. 90 E.

STABLE PAVING BRICKS, TERRA-METALLIC.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London.

No. 91 E.

STABLE PAVING BRICKS—WELSH CLAY.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London. *See* Advertisement.

No. 92 E.

STABLE PAVING BRICKS, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 93 E.

STABLE PAVING BRICKS, TERRA-METALLIC.

Garrett, Brothers, Burslem; and 15, South Wharf, Paddington.

No. 94 E.

STABLE PAVING BRICKS, TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 95 E.

MISCELLANEOUS PAVING BRICKS.

Fire Bricks and Lumps.

No. 97 E.

FIRE BRICKS.

Harper and Moore, Stourbridge.—1851.

NOTE.—The use of fire clay is not of very ancient date, and has greatly increased within the last few years. It is found in England almost exclusively in the coal measures, and from different districts the quality is found to differ considerably. The so-called Stourbridge clay is the best known, but other kinds are almost, if not quite, as well adapted for the higher purposes of manufacture, being equally free from alkaline earths and iron, the presence of which renders the clay fusible when the heat is intense.

The proportions of silica and alumina in these clays vary considerably; the former amounting sometimes to little more than 50 per cent., while in others it reaches beyond 70; the miscellaneous ingredients ranging from less than 1½ to upwards of 7 per cent.

No. 98 E.

VARIOUS, NEWCASTLE FIRE BRICKS.

Manufactured by Messrs. Cowen and Co., Blaydon Burn, Newcastle-upon-Tyne. London Agents, F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S.

No. 99 E.

STOURBRIDGE FIRE BRICKS.

Hickman and Co.; F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S., and Kingsland Basin, N.E.

No. 100 E.

WELSH FIRE BRICKS,—VARIOUS.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, and Kingsland Basin.

No. 101 E.

FIRE BRICKS.

Fayle and Co., Poole, Dorset, and 31, George Street, Hanover Square.

No. 102 E.

FIRE BRICKS.

Joseph Pease, Darlington.—1851.

No. 103 E.

FIRE BRICKS.

G. H. Ramsay, Derwent Haugh, Newcastle.—1851.

No. 104 E.

FIRE BRICKS.

The Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford.

No. 105 E.

FIRE BRICKS—RED CLAY.

W. Cawte, Maker, Furze Hall Brick Yard, Fareham, Hants.

No. 106 E.

FIRE BRICKS—WHITE CLAY.

Gibbs and Canning, Brick, Tile, and Pipe Works, Tamworth.

No. 107 E.

FIRE BRICKS (PORTUGAL).—1851.

NOTE.—The material from which these bricks are made appears to be of good quality, and free both from iron and alkaline earths.

Fire Lumps.

No. 109 E.

FIRE LUMP,—NEWCASTLE.

Cowen and Co., Blaydon Burn. London Agents, F. and G. Rosher and Co., Ward's Wharf, Blackfriars; and Kingsland Basin.

No. 110 E.

FIRE LUMP,—STOURBRIDGE.

(See note, p. 65.)

F. and G. Rosher and Co., Ward's Wharf, Blackfriars; and Kingsland Basin.

No. 111 E.

FIRE LUMPS,—WELSH.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars; and Kingsland Basin. *See* Advertisement.

Fire Tiles.

No. 112 E.

FIRE TILES,—NEWCASTLE.

Cowen and Co., Blaydon Burn. Agent, F. and G. Rosher and Co., Ward's Wharf, Blackfriars; and Kingsland Basin.

No. 113 E.

FIRE TILES,—STOURBRIDGE.

Hickman and Co.; F. and G. Rosher and Co., Agents, Ward's Wharf, Blackfriars, S.

No. 114 E.

FIRE TILES,—WELSH.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S.

Oven Tiles, &c.

No. 116 E.

WINDSOR OVEN TILES.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S.

No. 117 E.

WINDSOR OVEN BRICKS.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S. *See* Advertisement.

No. 118 E.

OVEN BRICKS AND TILES, RED.

W. Cawte, Maker, Furze Hall Brick Yard, Fareham, Hants.

No. 119 E.

FIRE TILES, WHITE.

Quarry, 12 and 18 inch.

Gibbs and Canning, Brick, Tile, and Pipe Works, Tamworth.

Articles manufactured of Fire Clay.

No. 121 E.

FIRE CLAY OVEN.

W. Pierce, 5, Jermyn Street, Regent Street, S.W.

No. 122 E.

FIRE LUMP GRATES—VARIOUS SIZES.

W. Pierce, 5, Jermyn Street, Regent Street. *See* Advertisement.

NOTE.—These fire-lump grates are made of the following different sizes:—

The smallest, No. 1, requiring a chimney opening of 2 feet 10 inches wide, 3 feet high, with a depth of 14 inches, will warm a room 30 feet long, 15 feet wide, and 12 feet high. Price 4*l.* 15*s.*

No. 2 size, "medium," requires a chimney opening of 3 feet square and 14 inches deep, and will warm a room 40 feet long, by 15 feet wide, by 12 feet high. Price 5*l.* 10*s.*

No. 3 size, "large," will warm a room 50 feet by 20 feet, by 12 feet high, and requires a chimney opening of 3 feet 2 inches wide, 3 feet 4 inches high, and 18 inches deep. Price 6*l.* 10*s.*

No. 4 size, extra large, will be found sufficient for a room 70 feet by 24 feet, by 12 feet high. It requires a chimney opening 3 feet 4 inches square, by 18 inches deep. Price 7*l.* 10*s.*

The air pipes to these grates, for admitting fresh air, should equal an area of 7 in. by 6 in. for No. 1 size; 9 in. by 6 in. for No. 2 size; 10 in. by 7 in. for No. 3 size, and 12 in. by 7 in. for No. 4 size. Means should be arranged for regulating the quantity of air admitted, or for shutting it off entirely if not required.

Grates of various sizes are also made suitable for cottages and small tenements. They can be set with the greatest facility, and vary from 10 to 32 inches in extreme width, by 9 to 11 inches in extreme depth.

No. 123 E.

ORNAMENTAL FIRE LUMP GRATE, FITTED WITH VENTILATING AIR SHAFTS, &c.

W. Pierce, 5, Jermyn Street, Regent Street.

NOTE.—This grate is in use at the London Hospital, and warms a room 70 feet long by 20 feet wide, by 12 feet high.

No. 124 E.

PATENT "PYROPNEUMATIC" FIRE LUMP STOVE.

Showing the arrangement of its air and smoke flues.

W. Pierce, 5, Jermyn Street, Regent Street.

No. 125 E.

ORNAMENTAL STOVE. FITTED.

"Pierce's Patent Pyropneumatic."

W. Pierce, 5, Jermyn Street, Regent Street. *See* Advertisement.

NOTE.—These pyro-pneumatic stoves are made of the following sizes:—

The "small" size, which will warm a room 30 by 20 feet, and 15 feet high. Price, plain pattern, 10*l.* 5*s.*

The "medium" size, suitable for a room 45 by 30 feet, by 16 feet high. Price, plain pattern, 14*l.* 10*s.*

The "large" size, sufficient for a room 60 by 35 feet, by 10 feet high. Price 18*l.*, plain pattern.

No. 126 E.

ORNAMENTAL GRATE, WITH STOURBRIDGE FIRE BRICK BACK, REGULATING DAMPER, AND SLIDING BLOWER.

Edwards and Son, Ironmongers, Great Marlborough Street, Oxford Street, W.C. Price 2*l.*

No. 127 E.

ORNAMENTAL GRATE, WITH SIDES OF ORNAMENTAL TILES, STOURBRIDGE FIRE BRICK BACK, AND REGULATING DAMPER.

Edwards and Son, Stove Makers, 49, Great Marlborough Street, Oxford Street, W. Price 2*l.* 16*s.*

No. 128 E.

ORNAMENTAL CHIMNEY TOPS, FIRE CLAY.

G. H. Ramsay, Derwent Haugh, Newcastle.—1851.

No. 129 E.

ORNAMENTAL CHIMNEY TOPS, FIRE CLAY.

The Garnkirk Company, Messrs. M. and T. Sprot, Garnkirk, Lanarkshire.—1851.

No. 130 E.

ORNAMENTAL CHIMNEY TOPS, FIRE CLAY.

Thomas Peake, Tileries, Tunstall, Stafford, and 21 Wharf, City Road Basin.

No. 131 E.

ORNAMENTAL CHIMNEY TOPS, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford.

No. 132 E.

RIDGE TILES WITH ORNAMENTS, FIRE CLAY (See Ridge Tiles).

Joseph Pease, Darlington.—1851.

No. 133 E.

RIDGE ORNAMENTS, WHITE CLAY.

Fayle and Co., Poole, Dorset, and 31, George Street, Hanover Square.

No. 134 E.

FINIALS FOR GABLES, WHITE CLAY.

Fayle and Co., Poole, Dorset.

No. 135 E.

ORNAMENTS FOR GABLES, &c., WHITE CLAY.

Fayle and Co., Poole, Dorset, and 31, George Street, Hanover Square.

No. 136 E.

ORNAMENTAL BALUSTRADE, WHITE CLAY, with Base and Capping, &c., complete.

Fayle and Co., Poole, Dorset, and 31, George Street, Hanover Square.

No. 137 E.

ORNAMENTAL VASE AND PEDESTAL, BRICK CLAY, RED.

The Grangemouth Coal Company, Grangemouth.— 1851.

Miscellaneous Articles.

No. 140 E.

ORNAMENTAL GARDEN EDGING, RED AND TERRA-METALLIC; VARIOUS PATTERNS.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 141 E.

ORNAMENTAL GARDEN EDGINGS, GREEN; VARIOUS PATTERNS.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 142 E.

ORNAMENTAL GARDEN EDGINGS, WHITE; VARIOUS PATTERNS.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 143 E.

ORNAMENTAL GARDEN EDGINGS, RED AND TERRA-METALLIC; VARIOUS PATTERNS.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 144 E.

ORNAMENTAL GARDEN EDGINGS, RED; VARIOUS PATTERNS.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 145 E.

ORNAMENTAL GARDEN EDGINGS, RED AND TERRA-METALLIC; VARIOUS PATTERNS.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 146 E.

ORNAMENTAL GARDEN EDGINGS, TERRA-METALLIC; VARIOUS PATTERNS.

Thomas Peake, Tileries, Tunstall, Stafford, and 21 Wharf, City Road Basin.

No. 147 E.

GARDEN EDGINGS, TERRA COTTA.

J. M. Blashfield, Stamford, and 377, Oxford Street, London, W.

No. 148 E.

ORNAMENTAL GARDEN EDGINGS, TERRA COTTA.

Gibbs and Canning, Brick and Tile Works, Tamworth.

No. 149 E.

ORNAMENTAL FLOWER POTS AND SAUCERS, TERRA COTTA.

Gibbs and Canning, Tamworth.

No. 150 E.

GARDEN SEAT, OR STAND FOR VASES, &c., TERRA COTTA.

An imitation of the stump of an oak tree.

Gibbs and Canning, Tamworth.

No. 151 E.

GARDEN SEAT, TERRA COTTA.

Coloured in imitation of the stump of an oak.

L. Elliott and Sons, Dale Hall Potteries, Stafford.

No. 152 E.

GARDEN EDGINGS; VARIOUS.

Section F.

TILES FOR ROOFING, FLOORING, AND WALL DECORATION.

Roofing Tiles.

No. 1 F.

Pan Tiles; Common, Red.

No. 2 F.

Pan Tiles; Irish Clay.

Enniskillen.—1851.

No. 3 F.

Pan Tiles; Hand and Machine made.

The Adamantine Brick and Tile Works, *Little* Bytham Station, Great Northern Railway Station, Stamford.

No. 4 F.

Pan Tiles; Terra-Metallic.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 5 F.

Ventilating Roof Tiles for Stables and Granaries.

David Methven and Sons, Kirkcaldy, Scotland.—1851.

No. 6 F.

Single Channelled Tiles; Flat or Roman.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 7 F.

Single, Double, and Treble Channelled Tiles.

John Sealey, Bridgewater, Somersetshire.

No. 8 F.

Plain Tiles; Brown.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 9 F.

Plain Tiles; Red and Green.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 10 F.

PLAIN TILES; TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 11 F.

PLAIN TILES; COLOURED TO MATCH OLD TILING.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 12 F.

PLAIN TILES; RED.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 13 F.

PLAIN TILES; TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 14 F.

PLAIN TILES; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 15 F.

PATENT PLAIN TILES; RED.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London. *See* Advertisement. Price 70*s.* per 1,000.

No. 16 F.

TILING, MISCELLANEOUS; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin. *See* Advertisement.

No. 17 F.

HIP TILES; RED.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 18 F.

HIP TILES; TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 19 F.

HIP TILES; RED AND GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 20 F.

HIP TILES; TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 21 F.

HIP TILES; LARGE SIZE; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 22 F.

HIP TILES; SMALL SIZE; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

Ornamental Roofing Tiles.

No. 25 F.

PLAIN TILES; DARK BROWN.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 26 F.

PLAIN TILES; RED.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 27 F.

PLAIN TILES; TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 28 F.

PLAIN TILES; RED

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 29 F.

PLAIN TILES; GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 30 F.

PLAIN TILES; TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 31 F.

PLAIN TILES; COLOURED TO MATCH OLD TILING.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 32 F.

ORNAMENTAL EAVES TILES; RED.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 33 F.

SMALL ORNAMENTAL ROOFING TILES; RED, AND TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 34 F.

PLAIN TILES; VARIOUS COLOURS.

No. 35 F.

PLAIN TILES; GLAZED AND COLOURED.

No. 36 F.

PLAIN TILES; ENAMELLED AND COLOURED.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, London, W.

No. 37 F.

VALLEY TILES; GLAZED.

W. Colman, Swanton Novers, Norfolk.—1851.

Ridge Tiles.

No. 40 F.

PLAIN RIDGE TILES; GREY AND RED.

John Sealey, Bridgewater, Somersetshire.

No. 41 F.

RIDGE TILES; SADDLE BACK AND WITH ROLL; RED, AND GREY.

John Sealey, Bridgewater, Somersetshire.

No. 42 F.

GROOVED RIDGE TILES FOR ORNAMENTAL CRESTS; RED, AND GREY.

John Sealey, Bridgewater, Somersetshire.

No. 44 F.

PLAIN RIDGE TILES; TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 45 F.

RIDGE TILES; SADDLE BACK; RED AND GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 46 F.

RIDGE TILES WITH ROLL; RED, GREEN, AND TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 47 F.

GROOVED RIDGE TILES FOR ORNAMENTAL CRESTS; RED, GREEN, AND TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 48 F.

SPECIMENS OF ORNAMENTAL RIDGE TILES, GROOVED AND WITH CRESTS; GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 49 F.

SPECIMENS OF ORNAMENTAL CRESTS; RED, GREEN, AND TERRA-METALLIC.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 50 F.

PLAIN RIDGE TILES; TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 51 F.

RIDGE TILES, WITH ROLL AND SADDLE BACK; RED, AND TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 52 F.

RIDGE TILES; GROOVED FOR ORNAMENTAL CRESTS; RED, AND TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 53 F.

SPECIMENS OF ORNAMENTAL CRESTS; RED AND TERRA-METALLIC.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 53a F.

SPECIMENS OF ORNAMENTAL TILES AND CRESTS; RED AND BLACK.

— Evelyn, Tile Works, Wotton, Dorking, Surrey.

No. 54 F.

ORNAMENTAL RIDGE TILES; PLAIN, AND WITH CRESTS, DARK BROWN COLOURS.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 54a F.

PLAIN RIDGE TILES; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 55 F.

RIDGE TILES; WITH ROLL AND SADDLE BACK; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 56 F.

RIDGE TILES, WITH LAPS; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 57 F.

RIDGE TILES, GROOVED FOR ORNAMENTAL CRESTS; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 58 F.

ORNAMENTAL RIDGE TILES; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 59 F.

SPECIMENS OF ORNAMENTAL CRESTS; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 60 F.

RIDGE TILES, SMALL, WITH ROLL AND GROOVED; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin. *See* Advertisement.

No. 61 F.

HIP RIDGE TILES; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 62 F.

PLAIN AND ORNAMENTAL, RIDGE TILES.

The Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford.

No. 63 F.

RIDGE TILES; FIRE CLAY.

Plain, and Grooved, with Ornamental Crests.

Joseph Pease, Darlington.—1851.

No. 64 F.

RIDGE TILES; TERRA-COTTA.

Grooved, with Ornamental Crests.

James Pulham, Broxbourne, Herts.

No. 65 F.

TILES AND CAPS FOR ITALIAN TILING; GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 66 F.

HIP TILES FOR ITALIAN TILING; GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 67 F.

RIDGE TILES FOR ITALIAN TILING; GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey. *See* Advertisement.

No. 68 F.

SPECIMENS OF ITALIAN TILING; GREEN.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 69 F.

TILES AND CAPS FOR ITALIAN TILING; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 70 F.

HIP TILES FOR ITALIAN TILING; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 71 F.

RIDGE TILES FOR ITALIAN TILING; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 72 F.

SPECIMENS OF ITALIAN TILING; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 73 F.

SPECIMENS OF ORNAMENTAL TILING; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin. *See* Advertisement.

No. 74 F.

PLAIN TILE, SEMI-GLAZED,—AUSTRIA.—1851.

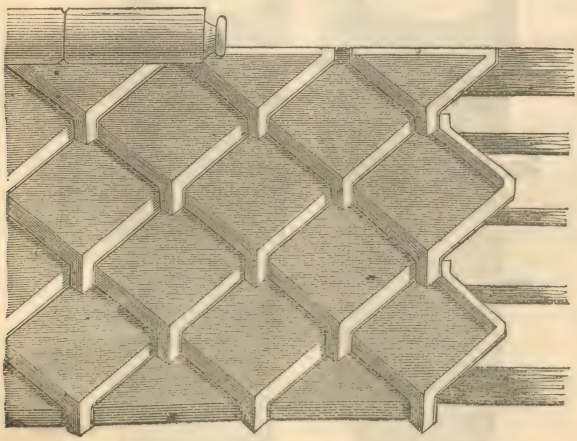
No. 75 F.

TILE COURTOIS—FRENCH.

M. A. Courtois, 148, Rue St. Lazare, Paris.—1855.

The tile Courtois, known from the name of its inventor, is perhaps the most simple, while the lozenge-shape (hereafter spoken of) gives more scope for the introduction of ornament; the square tile has also the advantage of having a less length of joint in proportion to its length, and consequently of having rather more of its surface exposed than the lozenge.

Each one of the tile Courtois weighs 4·5 lbs., and 180 of them are required for a square of 100 superficial feet, so that the weight of this amount of covering would be 810 lbs., and its cost 44*s*.

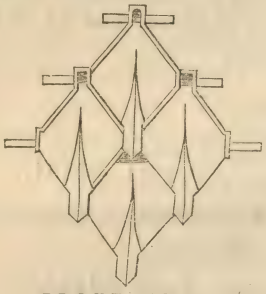


No. 76 F.

Lozenge Tile—French.

M. Burdin, Lyons.—1855.

The lozenge tile of M. Burdin, of Lyons, is strengthened by a slight rib along its centre, which adds materially to its ornamental appearance, and enables it to be made extremely thin and light, the square of this description of tiling not amounting to more than 770 lbs., and the single tile being 5·1 lbs. It is shown in three dimensions, running 150, 250, and 350 tiles to the square, and costing respectively *6l.*, *3l. 12s. 6d.*, and *3l. 4s.* the thousand tiles, or for the first two *18s.* the square, and for No. 3, *22s. 6d.*



FRONT VIEW.

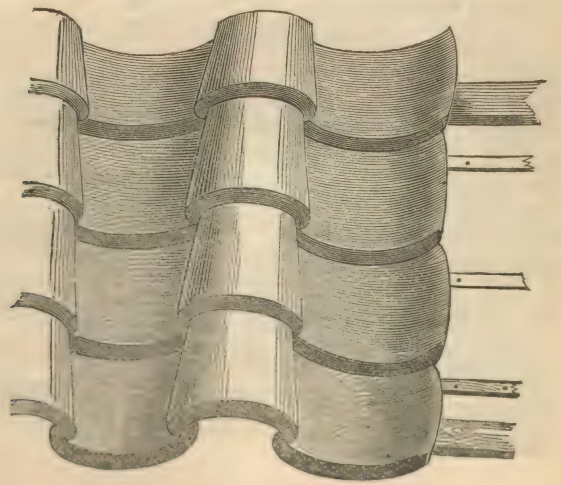
BACK VIEW.

No. 77 F.

Bridge Tiles—French.

The Paris Exhibition, 1855.

Another description of tile that may be noticed is that in which the longitudinal joint is formed by a similar flange on the face of each tile placed contiguous to each other, and covered by a cap or bridge tile.



No. 78 F.

Tiles—French.—1855.

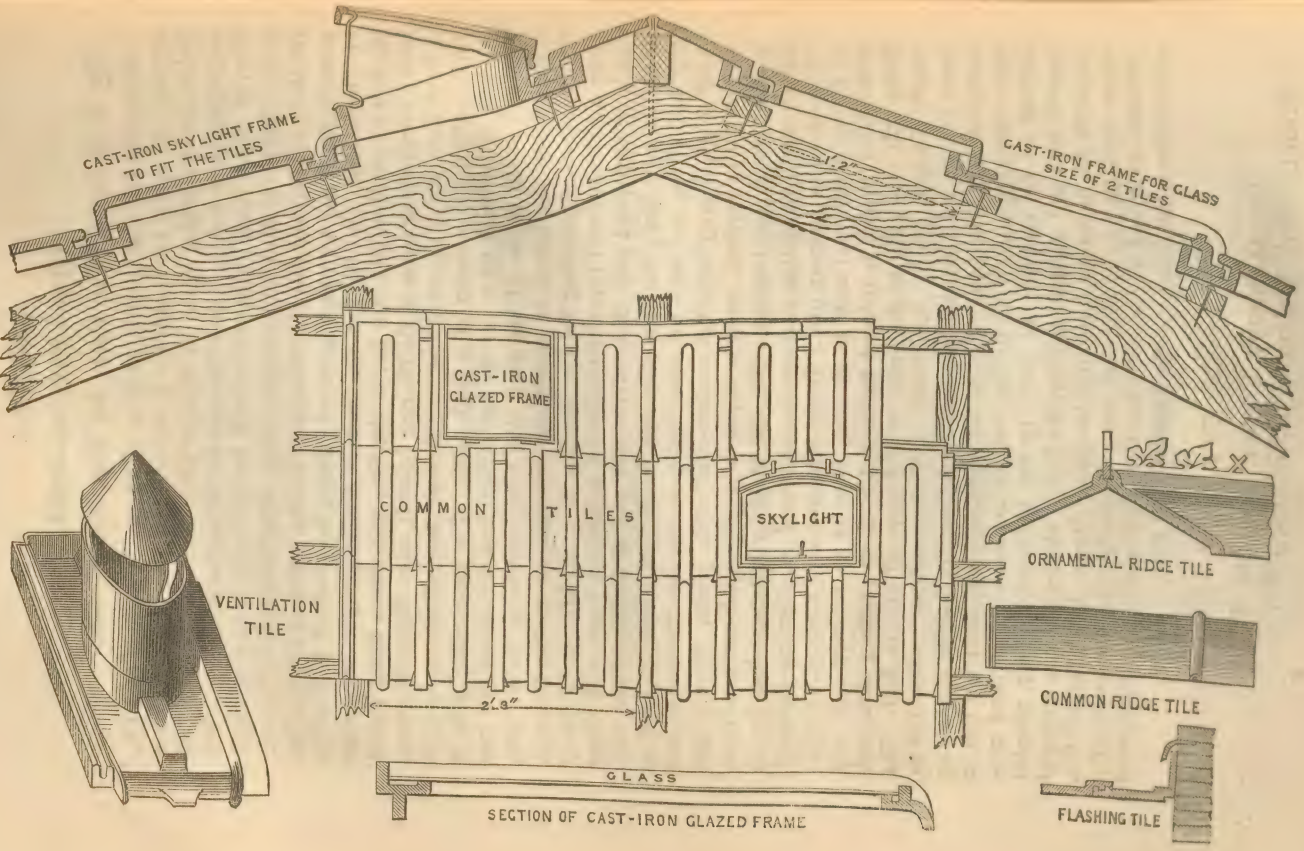
By E. Muller and Co., Paris, 33, Rue de Chabrolo.

Perhaps the best roofing tiles are those of Messrs. E. Muller and Co., of Paris, who provide not merely for a covering, but also give the means of introducing skylights either to open or fixed ventilation tiles, and of employing tiles as flashing round chimneys and in similar situations. The form of the tile seems a little complicated, but not at all so as to render it more difficult to be fixed, or to require a more skilled description of labour for that operation; and this slight complication does not seem to affect the manufacture in any way, their price not differing from that of the average of French tiles. This tile has the fillets or flanges along its lower edge slightly returned parallel to the face of the tile; this return being locked into a corresponding recess in the tile next below it, more effectually secures it from the action of the wind, and at the same time gives a water-tight joint without the necessity of a high pitch. The longitudinal joint is formed by two small fillets on the face of the one tile fitting into two grooves in the reverse of the next, thus being secured by three edges, lapping over two, instead of merely one over one, as in the Courtois. The method of providing for the insertion of a skylight is extremely simple and ingenious; it consists in having a cast-iron frame, with edges made to correspond with those of the tiles, and of the size of one, two, three, or more tiles; this frame forming the skylight frame is fixed in any part of the roof with the same facility as the tiles themselves, and is, of course, in every respect as weather-proof at the joints. Should light without air be required, recourse is had to a still simpler cast-iron frame, with a pane of glass inserted in it; and should ventilation alone be the object, special ventilating tiles can be introduced as often as necessary while laying the ordinary tiles. In the construction of roofs with the tile of Messrs. Muller, not only is the steep slope of an ordinary tiled roof avoided, but the pitch is reduced far below that of an ordinary slate roof, being only one-eighth of the span, or at a slope of one in four. The weight of a single tile on this system is 5·5 lbs., and as it takes 150 to cover a square, it follows that this quantity of covering weighs 825 lbs., or somewhat more than with some of the lozenge-shaped tiles; but this is more than compensated for by the decrease in amount of covering consequent on the alteration of pitch by the additional security afforded against wind and weather, and by the facility obtained in the fitting of skylights, &c., by the employment of the tiles of Messrs. E. Muller and Co., whose merit the jury of this class has acknowledged by the award of a first-class medal, and whose productions are well worthy the attention of constructors in this country.—*See* Diagram, next page.

No. 79 F.

Miscellaneous French Roofing Tiles.

From the Paris Universal Exhibition, 1855.


CAST-IRON SKYLIGHT FRAME TO FIT THE TILES
CAST-IRON FRAME FOR GLASS SIZE OF 2 TILES
1' 2"
CAST-IRON GLAZED FRAME
COMMON TILES
SKYLIGHT
2' 8"
VENTILATION TILE
ORNAMENTAL RIDGE TILE
COMMON RIDGE TILE
GLASS
SECTION OF CAST-IRON GLAZED FRAME
FLASHING TILE

Flooring Tiles; Plain, Encaustic, Mosaic, &c.

No. 80 F.

FLOORING TILES; RED AND WHITE.

5 and 9 inches square, and 12 inch octagonal.

John Ambrose, Copford, near Colchester, 1851.

No. 81 F.

FLOORING TILES; RED, BUFF, AND BLACK.

6 inch square, Red, Buff, and Black.
9 „ „ Buff.
9 × 4 inch square, Buff } For Borders.
9 × 3 „ „ Red }
3 × 3 „ „ (Dots), Red, Buff, and Black.

William Jones, Springfield Tile Works, Newcastle-under-Lyne.—1851.

No. 82 F.

FLOORING TILES; RED.

9 and 12 inches square.

John Sealey, Bridgewater, Somersetshire.

No. 83 F.

FLOORING TILES FOR MALT KILNS; PERFORATED.

12 inches square.

John Sealey, Bridgewater, Somersetshire.

No. 84 F.

FLOORING TILES FOR MALT KILNS; TERRA-METALLIC, PERFORATED.

9 and 12 inches square.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 85 F.

TILES FOR SKIRTINGS; TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 86 F.

MISCELLANEOUS TILES; TERRA-METALLIC, &c.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin. *See* Advertisement.

No. 87 F.

FLOORING TILES.

6 inch square, Red and Black.
4 „ „ Red, Buff, and Black.
6 „ hexagon, Red, Buff, and Black.
4 „ „ Red, Buff, and Black.
6 „ octagon, Terra-Metallic.

J. and W. Eastwood, Belvedere Road, Lambeth.

No. 88 F.

FLOORING TILES.

9 and 12 inches square, Red.
6 inch square, Buff and Black.
6 „ hexagon, Red, Buff, and Black.
6 „ octagon, Red, Buff, and Black.
2½ and 3 inches square (*dots*), Red, Buff, and Black.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London, S.

No. 89 F.

FLOORING TILES.

6 inches square, Red and Black.

Robert Brown, Surbiton Hill, Kingston, Surrey.

No. 90 F.

FLOORING TILES.

9 inch square, Red.
6 „ „ Red and Black.

R. and N. Norman, St. John's Pottery, Burgess Hill, Sussex.

No. 91 F.

FLOORING TILES; RED.

6 inch square.

James Luff, Tuddenham, Ipswich. *See* Advertisement.

No. 92 F.

FLOORING TILES; RED.

6 inch, square, 7 inch, pentagon.

W. Cawte, Maker, Furze Hall Brick Yard, Fareham.

No. 93 F.

FLOORING TILES; GLAZED.

9 inch hexagon.

John Roberts, Terra Cotta Works, Upnor, Rochester, Kent.

No. 94 F.

FLOORING TILES; PLAIN, INDENTED, AND INDENTED AND GLAZED.

Garrett and Brothers (late Haywood), Burslem, and 15, South Wharf, Paddington.

No. 95 F.

SPECIMENS OF TILE FLOORING IN CAST-IRON TRIANGULAR FRAMES.

Mr. Bridges Adams, 1, Adam Street, Adelphi, London.

No. 96 F.

SPECIMENS OF FLOORING TILES IN PANELS.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster.

No. 97 F.

SPECIMEN OF TILE FLOORING, LAID.

The Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster. *See* Advertisement.

Laid down 9th March 1860.

No. 98 F.

SPECIMENS OF MAW AND CO.'S FLOORING TILES; GEOMETRICAL PATTERNS.

Chiefly designed and arranged by M. Digby Wyatt, Architect.

Maw and Co., Benthall, near Broseley, Shropshire.

Agent, W. B. Simpson, 456, West Strand, W.C.

See Advertisement.

No. 99 F.

SPECIMEN OF MOSAIC TILE FLOORING, LAID.

Maw and Co., Benthall, near Broseley, Shropshire.

Agent, W. B. Simpson, 456, West Strand, W.C.

Laid down 1st September 1860.

No. 100 F.

ENCAUSTIC FLOORING TILES.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

NOTE.—Encaustic or inlaid tiles. These are made by pressing clay in the plastic state into an embossed plaster mould, the pattern or design on the mould being raised. When the tile is withdrawn from the mould the outline of the pattern is indented; and the indented parts are then filled in with liquid coloured clays, according to the colours it is wished to produce. The surface is then scraped quite flat until the pattern appears well defined. The tile is then fired, which brings out the colours to the proper tint.

The variety, beauty, and excellence of the encaustic and mosaic tiles manufactured by Messrs. Minton and Co., by a process which involves very great mechanical ingenuity, have been carried to a very high pitch of perfection. Messrs. Minton have, indeed, to some extent, followed in the track of similar manufactures among the ancients, both with regard to the uses, forms, and patterns of their tiles for paving and walls; but they have very greatly improved all the mechanical contrivances; introducing one method more especially, enormous compression to consolidate dry clay, which deserves very distinguished notice, and has been the commencement of an entirely new era in mosaic work in plastic material.

No. 101 F.

ENCAUSTIC BORDER, AND BORDER TILES; FOR FLOORS.

Minton and Co., Stoke-upon-Trent.

No. 102 F.

TWO SPECIMENS OF TILE FLOORING,—LAID.

Minton and Co., Stoke-upon-Trent.

Laid down, 18th December 1858.

No. 103 F.

MOSAIC PAVEMENT.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 104 F.

ANCIENT ROMAN MOSAICS, AND ONE PIECE ROSSO ANTICO.

Presented by Henry Cole, Esq., C.B.

PIECE OF ROSSO ANTICO.—From Tasso's Tomb, Rome.—About 1595.

PIECE OF MOSAIC.—From Tasso's Tomb, Rome.—About 1595.

MOSAICS.—From the Appian Way, Rome.

COLOURED MOSAICS.—From Puzzuoli, Rome.

No. 105 F.

FLOORING TILES; FRENCH.

From the Paris Universal Exhibition, 1855.

No. 106 F.

FLOOR TILES; FRENCH.

From the Paris Universal Exhibition, 1855.

M. Chabert, St. Just des Marais, France.

NOTE.—A very smooth, even, unglazed, octagonal tile, of a beautiful cream colour, and so close in texture as almost to take a kind of polish. They are accompanied by small square red tiles for filling in between the octagons. The price of the octagons per 10 superficial feet is 4*s.* 6*d.*, and the necessary number of red squares for this dimension is 1*s.* 3*d.*, so that the pavement complete costs rather less than 7*d.* per foot superficial.

No. 107 F.

PANEL, FLOORING TILES; FRENCH.

From the Paris Universal Exhibition, 1855.

No. 108 F.

TWO PANELS, TESSELATED FLOORING TILES; FRENCH.

From the Paris Universal Exhibition, 1855.

NOTE.—Mr. Singer's patent, obtained in 1839, had reference to a new mode of forming tesseræ by cutting out of thin layers of clay pieces of the required form, which are afterwards dried and baked in the usual way. The patent also included a new method of uniting the tesseræ with cement. This invention is considered to have been a great step towards the revival of the Roman art of making tesselated pavements.

No. 109 F.

MISCELLANEOUS FLOORING TILES.

Tiles for Wall Decoration, &c.

No. 110 F.

WHITE GLAZED WALL TILES; DUTCH.

5 and 6 inch, square.

Imported by F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, London.

No. 111 F.

WHITE GLAZED WALL TILES; PORCELAIN.

6 inch square.

The Architectural Pottery Company, Poole, Dorset; and 36, Parliament Street, Westminster.

No. 112 F.

WHITE GLAZED WALL TILES; PORCELAIN.

6 and 8 inch square, and 6 inch hexagon.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, London, W.

No. 113 F.

GLAZED AND COLOURED WALL TILES; DUTCH.

5 inch square.

Imported by F. and G. Rosher and Co., Ward's Wharf, Blackfriars, London.

No. 114 F.

GLAZED AND COLOURED WALL TILES.

9 inch, hexagon tiles.

John Roberts, Terra Cotta Works, Upnor, Rochester, Kent.

NOTE.—The colours are produced by chemically prepared clays.

No. 115 F.

GLAZED AND COLOURED WALL TILES; PORCELAIN.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 116 F.

GLAZED AND COLOURED BORDER TILES; PORCELAIN.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 117 F.

GLAZED AND COLOURED WALL TILES; PORCELAIN; FOR ECCLESIASTICAL DECORATIONS.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 118 F.

GLAZED AND COLOURED WALL TILES; MAJOLICA WARE; FOR ECCLESIASTICAL DECORATIONS.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 119 F.

TWO PANELS, TILES FOR WALL DECORATION; PORCELAIN.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

Painted by Henry Machn, student; School of Art, Stoke-upon-Trent.

No. 120 F.

ORNAMENTAL WALL TILES; DELLA ROBBIA WARE.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, London, W.

No. 121 F.

PORTION OF FRIEZE, ENAMELLED EARTHENWARE.

A reproduction of Della Robbia Ware.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 122 F.

MISCELLANEOUS ORNAMENTAL WALL TILES; GLAZED AND ENAMELLED.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 123 F.

ORNAMENTAL WALL TILES; TERRA COTTA.

6 inch square.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 124 F.

TILES FOR DADOS; RED, BLACK, AND BUFF.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 125 F.

ORNAMENTAL TRIANGULAR AND HEXAGON ROSETTES; RED, BUFF, AND BLACK.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 126 F.

ORNAMENTAL INDENTED STONE COLOURED TILES.

6 inch square.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 127 F.

ORNAMENTAL PLAQUES; ENCAUSTIC WARE.

For Wall and Floor Decoration, &c.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, London, W.

No. 128 F.

GLAZED AND COLOURED ORNAMENTAL WALL TILES; TERRA COTTA.

Garrett, Brothers, Burslem; and 15, South Wharf, Paddington.

No. 129 F.

LETTER TILES; BLACK, WITH WHITE LETTERS; GLAZED.

No. 130 F.

ENCAUSTIC LETTER TILES; VARIOUS.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, London, W.

No. 131 F.

MISCELLANEOUS COLLECTION OF TILE WORK.

No. 132 F.

LABELS, &c.; EARTHENWARE; GLAZED AND COLOURED.

Farnshaw and Graves, Masborough Pottery, Rotherham, Yorkshire.—1851.

No. 133 F.

PANELS OF FAIENCE TILES, FOR WALL DECORATION.

D. Rafael Gonzalez, Y. Vals, Valencia, Spain.

Exhibited at the Great Exhibition, 1851.

No. 134 F.

COLOURED AND GLAZED FLOOR AND WALL TILES; TERRA COTTA.

Manufactured by F. and G. Colonnesse, Naples.

Price *5d.* each.

No. 135 F.

GLAZED EARTHENWARE TILE; FRENCH.

With Foliated Ornament filled in.

The Paris Universal Exhibition of 1855.

No. 136 F.

GLAZED EARTHENWARE TILE; FRENCH.

Filled in, with Roman Rosette.

The Paris Universal Exhibition of 1855.

Section G.

TERRA COTTA.

Note.—The manufacture of terra cotta is an important and interesting modification of common moulded brickwork, requiring a clay of great purity, resembling that used for pipe making and potter's ware, containing but little iron, and made up with a quantity of crushed pottery and calcined flints, the whole being well mixed and burnt to a very high heat. It thus approaches in its nature to what is called stone ware, but the fusion of the materials is not effected.

It should be observed that the true terra cotta of the ancients was a less baked and much less durable material than the modern kind, being, in fact, little more than sun-baked clay of considerable purity.

Terra cotta is a species of earthen, or rather stone ware, composed of potter's clay, fine sand, and pulverized potsherds; these materials are thoroughly incorporated, and either modelled or cast (in the state of a thin paste) in porous plaster moulds, which absorb the water with which the materials are mixed. After air-drying, the objects are baked in proper kilns at a very high temperature.

The term terra cotta means, literally, baked clay, and is applied to a large class of antique works of art modelled in clay, including those which have been merely dried in the sun.

The art of producing ornamental works in clay was lost until Wedgwood, to whom the fictile art is so greatly indebted, rediscovered methods by which the finest works could be produced; and by employing Flaxman and other great artists, has left behind him specimens of art which are eagerly sought after in the present day.

This material has been used with success in France for external decorations, and would seem to offer peculiar advantages for the same purpose in this country, more especially in localities such as London, where stone dressings are so expensive that their use is almost abandoned in ordinary cases, and recourse is had to cements and compos of various kinds, which are far inferior, both in effect and lasting qualities, to the terra cotta.

No. 1 G.

Terra Cotta Lumps, for Dome Building.

James Pulham, Broxbourne, Herts.

No. 2 G.

Terra Cotta Tiles, for Dome Covering.

James Pulham, Broxbourne, Herts.

No. 3 G.

Terra Cotta Ribs, for Domes.

James Pulham, Broxbourne, Herts.

No. 4 G.

TERRA COTTA BUILDING LUMPS; GOTHIC DESIGNS.

James Pulham, Broxbourne, Herts.

No. 5 G.

ILLUSTRATIONS OF THE USE OF TERRA COTTA.

J. Pulham, Broxbourne, Herts.

A small font, Gothic design; a flooring tile.

No. 6 G.

ORNAMENTAL BUILDING LUMPS; TERRA COTTA.

Red and buff colours.

Lewis Thomson, Wisbeach, Cambridgeshire.

No. 7 G.

SHAFTS, FOR WINDOW MULLIONS; RED TERRA COTTA.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 8 G.

ORNAMENTAL WINDOW TRACERY; TERRA COTTA.

Lewis Thomson, Wisbeach, Cambridgeshire.

See Advertisement.

No. 9 G.

TRUSS; TERRA COTTA.

The Dippenhall Brick and Tile Works, Farnham, Surrey; E. Whalley, Manager.

No. 10 G.

TRUSS; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 11 G.

TRUSS; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire, and 377, Oxford Street, W.

No. 12 G.

ORNAMENTAL TRUSS; TERRA COTTA.

Gibbs and Canning, Brick and Tile Works, Tamworth.

No. 13 G.

ORNAMENTAL BRACKET; GOTHIC DESIGN; TERRA COTTA.

Gibbs and Canning, Brick and Tile Works, Tamworth.

No. 14 G.

PORTION OF FRIEZE; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 15 G.

STRING COURSE; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 16 G.

STRING COURSE; GREEK FRET; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 17 G.

CORNICE MOULDINGS; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 18 G.

EGG AND TONGUE MOULDING; RED TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 19 G.

GOTHIC MOULDING; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 20 G.

GOTHIC BRACKET; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 21 G.

ORNAMENTAL PLAQUES; RED AND WHITE TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 22 G.

ILLUSTRATIONS OF THE USE OF TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire, and 377, Oxford Street, W.

No. 23 G.

ORNAMENTAL PANEL, RED TERRA COTTA, REPRESENTING HOPS.

From designs by Charles Buxton, Esq., M.P.—1851.

Messrs. Blanchard and Co., Blackfriars Road, London, S.

No. 24 G.

ILLUSTRATIONS OF THE USE OF TERRA COTTA.

Messrs. Blanchard and Co., Blackfriars Road, London, S. Comprising :—

Portions of ornamental balustrades.

Floriated crosses for finials of church gables.

Finials for the piers of entrance gates ; A pair of eagles, &c. *See* Advertisement.

No. 25 G.

ILLUSTRATIONS OF THE APPLICATION OF TERRA COTTA FOR ORNAMENTAL PURPOSES IN BUILDINGS.

Architraves ; Water lily and chain patterns.

Pateras ; vine pattern.

String courses ; scroll and gothic patterns.

Skirtings ; moulded.

Gibbs and Canning, Brick and Tile Works, Tamworth.

No. 26 G.

PANEL ; TERRA COTTA.

A bas-relief ornament.

The Bank Park Pyropolite Works, Preston Pans, 1851.

No. 27 G.

PANEL ; TERRA COTTA.

The Royal Arms of England.

J. M. Blashfield, Stamford, Lincolnshire, and 377, Oxford Street, W.

No. 28 G.

ORNAMENTAL TRACERY FOR BALUSTRADES ; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 29 G.

TRACERY FOR BALUSTRADES ; TERRA COTTA.

Italian design.

J. M. Blashfield, Stamford, Lincolnshire.

No. 30 G.

TRACERY FOR BALUSTRADES ; TERRA COTTA.

Elizabethan design.

J. M. Blashfield, Stamford, Lincolnshire, and 377, Oxford Street, W.

No. 31 G.

BALUSTERS; TERRA COTTA. Various Sizes.

J. M. Blashfield, Stamford, and 377, Oxford Street, W.

No. 32 G.

ORNAMENTAL COLUMNS; TERRA COTTA.

The bases, shafts, and capitals, are of various designs.

No. 33 G.

ORNAMENTAL PORTIONS OF THE ABOVE COLUMNS.

The bases, shafts, various centres, and capitals.

Manufactured by M. H. Blanchard and Co., 74, Blackfriars Road, S.

NOTE.—These ornamental columns were used in the South arcades of the Royal Horticultural Society's garden at South Kensington. They were designed by Godfrey Sykes, late modelling master of the School of Art, Sheffield, and were modelled by his pupils.

No. 34 G.

TRACERY FOR WINDOW FRONTS, &c.; GLAZED AND COLOURED TERRA COTTA.

Imitation of Chinese work.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, W.

No. 35 G.

ORNAMENTAL TERRA COTTA WORK.

Imitation of stone carving.

Minton and Co., Stoke-upon-Trent, and 50, Conduit Street, Regent Street, London, W.

No. 35 a G.

ILLUSTRATIONS OF GLAZED TERRA COTTA.

Imitation Majolica Ware.

Minton and Co., Stoke-upon-Trent.

NOTE.—These colossal medallions were executed by Messrs. Minton and Co. as trial specimens for the external decoration of the Exhibition building of 1862.

No. 37 G.

CHIMNEY-TOP, TERRA COTTA.

Joseph Cliff and Sons, Wortley, Leeds; Goods Depôt, King's Cross, N.

No. 38 G.

CHIMNEY TOP; TERRA COTTA.

Perforated at the bottom, to prevent down draughts in the chimney.

John Roberts, Terra Cotta Works, Upnor, Rochester, Kent. *See* Advertisement.

No. 39 G.

ORNAMENTAL CHIMNEY TOPS; TERRA COTTA.

Doulton and Co., Potteries, High Street, Lambeth.

No. 40 G.

ORNAMENTAL CHIMNEY TOP; TERRA COTTA.

The Bank Park Pyropolite Works, Preston Pans.—1851.

No. 41 G.

PATENT PORTABLE STOVES; TERRA COTTA.

John Roberts, Terra Cotta Works, Upnor, Rochester, Kent. *See* Advertisement.

NOTE.—Ordinary coal, or a prepared fuel, to be had of the patentee, may be burnt in these stoves. Their price varies from 40*s.* to 50*s.*, according to their size and design. They are suitable for small rooms, conservatories, harness-rooms, &c.

No. 42 G.

ORNAMENTAL TERRA COTTA, FIRE STOVES.

Modern Italian work.

NOTE.—Purchased in 1861 at the Florence Exhibition, and manufactured by Ginori and Co., Doccia; and Furlani and Co., Florence.

No. 44 G.

ORNAMENTAL TERRA COTTA; FRENCH WORK.

From stone details at Toulouse, sculptured by Bachelier, a pupil of Michael Angelo.

Messrs. Virebent, Toulouse, France.

Procured at the Paris Universal Exhibition, 1855.

No. 45 G.

ORNAMENTAL CORNICE, FOR A WINDOW HEAD; TERRA COTTA; FRENCH WORK.

M. Garnaud, Paris.

Procured at the Paris Universal Exhibition, 1855.

For the window itself, see next item.

No. 46 G.

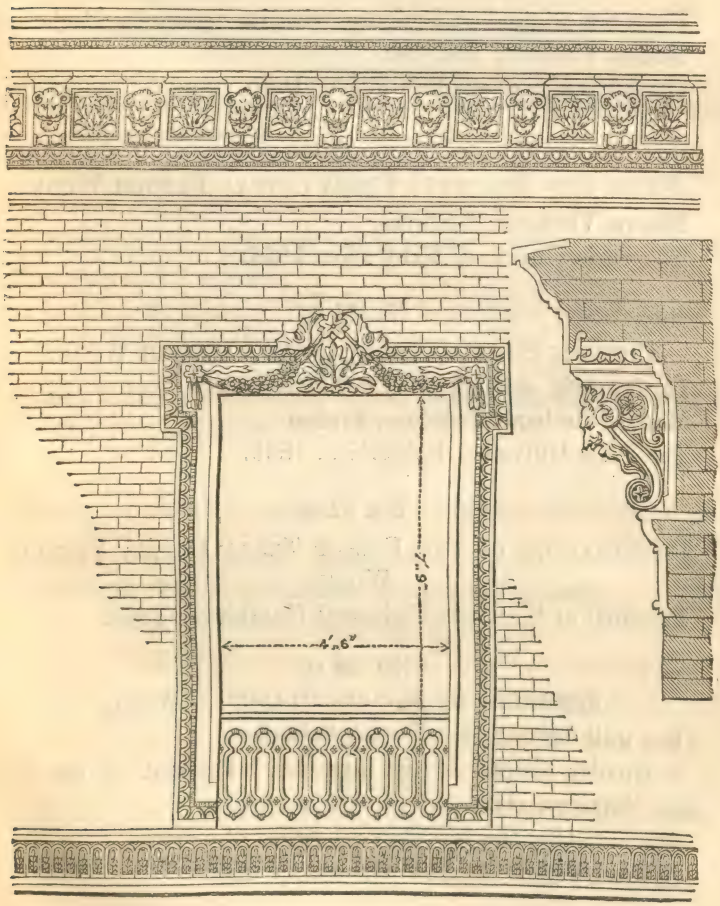
ORNAMENTAL WINDOW; TERRA COTTA; FRENCH WORK.

With an ornamental balustrade across the lower part, and an enriched string course under the sill.

M. Garnaud, Paris.

Procured at the close of the Paris Universal Exhibition, 1855. Price 12*l.*

ORNAMENTAL WINDOW, CORNICE, AND STRING COURSE; IN TERRA COTTA. BY M. GARNAUD.



No. 47 G.

WINDOW TRACERY; TERRA COTTA; FRENCH WORK.

From the original at Toulouse, with its details by Bachelier.
The Paris Universal Exhibition, 1855.

No. 48 G.

WINDOW TRACERY; TERRA COTTA; FRENCH WORK.

From the original at Toulouse, with its details by Bachelier.
The Paris Universal Exhibition, 1855.

No. 49 G.

WINDOW TRACERY; TERRA COTTA; FRENCH WORK.

From the original at Toulouse, with its details by Bachelier.
Messrs. Virebent, Toulouse.
The Paris Universal Exhibition, 1855.

No. 50 G.

NICHE AND BRACKET; TERRA COTTA; FRENCH WORK.

Messrs. Virebent, Toulouse.
The Paris Universal Exhibition, 1855.

No. 51 G.

CHIMNEY PIECE IN TERRA COTTA; FRENCH WORK.

In the style of the French "Renaissance."
Messrs. Virebent, Toulouse, France.
The Paris Universal Exhibition, 1855.

No. 52 G.

ILLUSTRATIONS OF THE USE OF TERRA COTTA; FRENCH WORK.

Procured at the Paris Universal Exhibition, 1855.

No. 53 G.

SPECIMENS OF MODERN MAJOLICA WARE.

For wall decoration. French manufacture.

A circular plaque, 19½ in. diameter. Portrait of the Emperor Napoleon III.

A square tile, 15¼ by 13 in.; portion of a frieze.

A. Jean, Paris.

No. 54 G.

SPECIMENS OF MODERN MAJOLICA WARE, FRENCH MANUFACTURE.

An ornamental key stone. A female head surrounded by a wreath.

A highly ornamental capital.

G. Pull, Paris.

NOTE.—These specimens of Majolica were purchased at the Paris Art Exhibition of 1861.

No. 55 G.

SPECIMENS OF ANCIENT ROMAN TERRA COTTA; FLOOR TILES.

No. 56 G.

SPECIMEN OF ANCIENT ROMAN ORNAMENTAL WORK; TERRA COTTA.

NOTE.—These specimens of ancient Roman terra cotta work, probably date before the Christian era.

No. 57 G.

ANCIENT ROMAN TERRA COTTA TILE.

Found in the old wall of the City of London, between Newgate and Ludgate.

Lent by R. Moffatt, Esq., M.P., 103, Eaton Square, S.W.

No. 58 G.

TERRA COTTA TILES AND CAPS, WITH ORNAMENTED GLAZED ENDS, &C.; CHINESE WORK.

No. 59 G.

TERRA COTTA PARAPET, or RIDGE, GLAZED; CHINESE WORK.

No. 60 G.

TERRA COTTA RIDGE, WITH TERMINAL, GLAZED; CHINESE WORK.

No. 61 G.

TERRA COTTA ORNAMENTAL BALCONY FRONTS, UNGLAZED; CHINESE WORK.

No. 62 G.

TERRA COTTA ORNAMENTAL BALCONY FRONTS, GLAZED; CHINESE WORK.

No. 64 G.

VASE IN BRICK CLAY.—1851.

No. 65 G.

VASE, WHITE PORCELAIN.

J. Roberts, Upnor, near Rochester, Kent.

Price, 45*s.*

No. 66 G.

VASE, PORCELAIN, GLAZED BLACK.

J. Roberts, Upnor, near Rochester, Kent.

Price, 45*s.*

No. 67 G.

VASE IN BISCUIT; LOTUS ORNAMENT.

J. Bourne, Derby Pottery, Derby.—1851.

No. 68 G.

VASE WITH STAND, TERRA COTTA; ORNAMENT OF HOPS.

The Dippenhall Brick and Tile Works, Farnham, Surrey.

No. 69 G.

VASE AND PEDESTAL, TERRA COTTA; ORNAMENT OF HOPS.

The Dippenhall Brick and Tile Works, Farnham, Surrey.

E. Whalley, Manager.

No. 70 G.

VASE AND PEDESTAL, TERRA COTTA; LEAF PATTERN.

James Pulham, Broxbourne, Herts.

No. 71 G.

VASE AND PEDESTAL, TERRA COTTA; GOTHIC DESIGN.

James Pulham, Broxbourne, Herts.

No. 72 G.

VASE; LEAF PATTERN; TERRA COTTA.

VASE; IVY LEAF PATTERN; TERRA COTTA.

Gibbs and Canning, Tamworth.

No. 73 G.

VASE AND PEDESTAL; "THE WARWICK;" TERRA COTTA.

No. 74 G.

VASE AND PEDESTAL; GREEK DESIGN; TERRA COTTA.

Gibbs and Canning, Brick and Tile Works, Tamworth.

No. 75 G.

VASE; "THE WESTERN;" TERRA COTTA.

From the original in the British Museum.

M. H. Blanchard and Co., 74, Blackfriars Road, S.

No. 76 G.

COPY OF THE WARWICK VASE, TERRA COTTA, WITH PEDESTAL.

J. M. Blashfield, Stamford, Lincoln.

No. 77 G.

VASE IN RED TERRA COTTA.

Eagles drinking from the rim; on a circular Terra Cotta Pedestal, with an Ivy Leaf pattern around.

J. M. Blashfield, Stamford, Lincoln.

Modelled from a Drawing by Tatham, from the original in marble at Villa Albani, Rome.

No. 78 G.

VASE IN TERRA COTTA; "THE TEMPEST," Act 4, Scene 1.

J. M. Blashfield, Stamford, Lincoln.

Prospero is in centre, attended by Ariel.

On the right of Prospero, Ferdinand and Miranda.

On the left of Prospero, Juno and Ceres.

In the centre at back, is Iris with nymphs, and reapers, to dance.

One of the handles is supported by Sycorax; the other, by Caliban.

No. 79 G.

PENDANT VASE; RED TERRA COTTA.

J. M. Blashfield, Stamford, Lincoln, and 377, Oxford Street, W.

No. 80 G.

VASE, BLUE AND WHITE; MAJOLICA WARE.

Minton and Co., Stoke-upon-Trent, and 50 Conduit Street, Regent Street, W.

No. 81 G.

GARDEN FLOWER BASKET; RED TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire, and 377, Oxford Street, W.

No. 82 G.

GARDEN FLOWER BASKET; RED TERRA COTTA.

James Pulham, Broxbourne, Herts.

No. 83 G.

GARDEN FLOWER BASKET; TERRA COTTA; GOTHIC DESIGN.

Gibbs and Canning, Brick and Tile Works, Tamworth.

No. 84 G.

GARDEN ORNAMENT, TERRA COTTA, WITH PEDESTAL.

James Pulham, Broxbourne, Herts.

No. 85 G.

DESIGN FOR A FOUNTAIN; ENAMELLED WARE.

Executed by Minton and Co., Stoke-upon-Trent, from an Italian original of the 15th century, in the Art Museum, South Kensington.

No. 86 G.

DESIGN FOR A DRINKING FOUNTAIN; ENAMELLED WARE.

Executed by Minton and Co., Stoke-upon-Trent, from an Italian original in the Art Museum, South Kensington.

NOTE.—This specimen is in use as a drinking fountain in the entrance corridor of the Museum.

No. 88 G.

VASE, TERRA COTTA; ITALIAN WORK.

F. and G. Colonnesse, Naples.

No. 89 G.

ORNAMENTAL VASES, TERRA COTTA; MODERN ITALIAN MANUFACTURE.

NOTE.—These large vases were manufactured at Florence, and are used in Italy chiefly for growing orange trees, vines, &c. They are at present placed in the garden of the Science and Art Department, South Kensington.

No. 90 G.

HIGHLY ORNAMENTED VASE, TERRA COTTA; FRENCH WORK.

Messrs. Virebent, Toulouse.

From the Paris Universal Exhibition of 1855.

No. 91 G.

PENDANT VASE; RED TERRA COTTA.

A. Leicher and Co., Wiesbaden, Nassau.

NOTE.—Nassau is very rich in potters' clay, of the best quality; it is partly exported in a raw state under the name of Valendar clay. The manufacture of earthenware in Nassau is susceptible of greater development; a great drawback hitherto, having been the cost of fuel. There are also some manufactories of porcelain and fine pottery ware, clay tobacco pipes, and common earthenware.

No. 92 G.

ANGLE BRACKET, GLAZED EARTHENWARE; ZOLLVEREIN.—1851.

No. 94 G.

FIGURE IN TERRA COTTA.

By Henry Grimsley, Modeller, Oxford.—1851.

No. 95 G.

FIGURE IN TERRA COTTA; "FLORA."

James Pulham, Broxbourne, Herts.

No. 96 G.

FIGURE IN TERRA COTTA OF FLORA; WITH PEDESTAL.

M. H. Blanchard and Co., 74, Blackfriars Road, S.

No. 97 G.

A BUST—"HORACE"—TERRA COTTA.

J. M. Blashfield, Stamford, and 377, Oxford Street, W.

No. 98 G.

STATUETTE, "BOY READING;" TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 99 G.

STATUETTE, "GIRL WRITING;" TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 100 G.

BUST, H.R.H. THE LATE PRINCE CONSORT; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire.

No. 101 G.

BUST, H.M. THE QUEEN; TERRA COTTA.

J. M. Blashfield, Stamford, Lincolnshire, and 377, Oxford Street, W.

Section H.

EARTHENWARE,

And its Application for Sanitary Purposes.

No. 1 H.

Tiles for Sinks (Perforated), Terra-Metallic.

Thos. Peake, Tileries, Tunstall, Stafford, and at 21, Wharf, City Road Basin, London.

No. 2 H.

Tiles for Sinks,—Perforated.

The Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford.

No. 3 H.

Trap for a Drain, on Lowe's Principle, Terra-Metallic.

H. and R. Haywood, Burslem, Stafford.

See Garrett, Brothers. Sec. F., No. 94.

No. 4 H.

Yard Gulley and Grid, Glazed Stoneware.

Doulton and Co., Potteries, High Street, Lambeth.

No. 5 H.

Yard Gulley and Grid, Glazed Stoneware.

Gibbs and Canning, Tamworth.

No. 6 H.

Bricks for Drains, Terra-Metallic.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin, London.

No. 7 H.

Bricks for Drains, Terra-Metallic.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S.

No. 8 H.

Drain Pipes for Agricultural Purposes.

The Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford.

No. 9 H.

DRAIN PIPES (SMALL), TERRA-METALLIC.

Thomas Peake, Tunstall, Stafford, and 21, Wharf, City Road Basin, London.

No. 10 H.

MISCELLANEOUS BRICKS AND PIPES FOR DRAINS.

No. 11 H.

SOUGH GRID, TERRA-METALLIC.

Thomas Peake, Tunstall, Stafford, and 21, Wharf, City Road Basin, London.

No. 12 H.

DRAIN PIPES.

Manufactured by D. Methven and Sons, Kirkcaldy, Scotland. —1851.

No. 13 H.

STONEWARE PIPES, GLAZED, FOR IRRIGATION AND OTHER PURPOSES.

Joseph Pease, Darlington.—1851.

No. 14 H.

VITRIFIED STONEWARE PIPES.

Port Dundas Pottery, Glasgow.—1851.

No. 15 H.

GLAZED STONEWARE DRAIN PIPES.

2, 4, 6, 9, 10, and 18 inches in diameter.

Gibbs and Canning, Tile and Pipe Works, Tamworth.

No. 16 H.

DRAIN PIPES, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin, London.

No. 17 H.

TAPERING DRAIN PIPES, TERRA-METALLIC.

Thomas Peake, Tunstall, Stafford, and 21, Wharf, City Road Basin, London. *See* Advertisement.

No. 18 H.

MISCELLANEOUS VITRIFIED STONEWARE DRAIN PIPES.

No. 19 H.

STONEWARE DRAIN PIPES, on Creeke's Patent Principle for the Joints and Caps.

Manufactured by the Bourne Valley Pottery Co., Poole, Dorset. *See* Advertisement.

No. 20 H.

STONEWARE DRAIN PIPES, Jennings' Patent, for the Chairs and Saddles.

R. Jennings and Co., Holland Street, Blackfriars.

No. 21 H.

STONEWARE DRAIN PIPES, DOULTON'S PATENT, "OPERCULAR."

Doulton and Co., Potteries, High Street, Lambeth.

No. 22 H.

GLAZED STONEWARE TUBULAR PIPES FOR LARGE DRAINS.

Doulton and Co., Potteries, High Street, Lambeth. *See* Advertisement.

No. 23 H.

STONEWARE DRAIN PIPES.

One 4 in. pipe.
One 15 in. do.
One 18 in. do.
One 21 in. do.
One oval pipe 25 in. by 28 in.

Joseph Cliff and Sons, Wortley, Leeds, and Goods Depôt, Great Northern Station, King's Cross, N.

No. 24 H.

PATENT SEGMENTAL STONEWARE BLOCKS, FOR SEWER BUILDING.

Doulton and Co., Potteries, High Street, Lambeth.

No. 25 H.

SINGLE JUNCTION DRAIN PIPES, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 26 H.

SINGLE JUNCTION 6-INCH STONEWARE PIPE.

Gibbs and Canning, Tile and Pipe Works, Tamworth.

No. 27 H.

STONEWARE JUNCTION PIPES FOR DRAINS.

Two 12 in. single junction pipes.

Joseph Cliff and Sons, Wortley, Leeds, and Goods Depôt, Great Northern Station, King's Cross, N.

No. 28 H.

SINGLE JUNCTION STONEWARE DRAIN PIPES.

No. 29 H.

DOUBLE JUNCTION DRAIN PIPES, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 30 H.

DOUBLE JUNCTION STONEWARE DRAIN PIPES.

No. 31 H.

MISCELLANEOUS JUNCTION PIPES.

No. 32 H.

BENDS AND ELBOW PIPES FOR DRAINS, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 33 H.

BENDS AND ELBOW PIPES FOR DRAINS, STONEWARE; (VARIOUS.)

No. 34 H.

GLAZED 6-IN. BEND PIPE.

Gibbs and Canning, Tile and Pipe Works, Tamworth.

No. 35 H.

MISCELLANEOUS BEND AND ELBOW PIPES.

No. 36 H.

SYPHON PIPES, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin. *See* Advertisement.

No. 37 H.

SYPHON PIPES, GLAZED STONEWARE; (VARIOUS.)

No. 38 H.

SIX INCH GLAZED STONEWARE SYPHON PIPE.

Gibbs and Canning, Tile and Pipe Works, Tamworth.

No. 39 H.

MISCELLANEOUS SYPHON PIPES.

No. 40 H.

INVERT BLOCKS FOR SEWERS.

Doulton and Co., Potteries, High Street, Lambeth.

No. 41 H.

PATENT LIPPED INVERT BLOCKS FOR SEWERS.

Doulton and Co., Potteries, High Street, Lambeth.

No. 42 H.

INVERT BLOCKS FOR SEWERS.

One 2 ft. by 17½ inches.

Joseph Cliff and Sons, Wortley, Leeds, and Goods Depôt, Great Northern Station, King's Cross, N.

No. 43 H.

PATENT STONEWARE JUNCTION BLOCKS FOR SEWERS.

Doulton and Co., Potteries, High Street, Lambeth.

No. 44 H.

PIPES FOR FLUES, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 45 H.

SMOKE FLUES, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

No. 46 H.

COMBINED SMOKE AND AIR FLUE; TERRA COTTA.

(1 length).

Doulton and Co., Potteries, High Street, Lambeth.

No. 47 H.

FLUE PIPES, TERRA COTTA.

Doulton and Co., Potteries, High Street, Lambeth. *See* Advertisement.

No. 42 H.

PATENT GLAZED STONEWARE GAS OR WATER PIPES.

Two 4 in. pipes, patent joints.

Joseph Cliff and Sons, Wortley, Leeds.

No. 49 H.

MISCELLANEOUS PIPES.

For smoke or air flues, &c.

No. 50 H.

ANCIENT DRAIN PIPES, WITH SOCKET JOINTS.

Presented by C. Beale, Esq., 14, Moorgate Street, E.C.

NOTE.—These drain pipes were dug up in the park at Leyton Grange, Low Leyton, Essex.

No. 51 H.

CHIMNEY TOPS, TERRA-METALLIC.

Thomas Peake, Tileries, Tunstall, Stafford, and 21, Wharf, City Road Basin.

Section I.

ASPHALTES, BITUMEN, &c., and their Application.

Asphalte.

Note.—Asphalte is generally obtained from natural sources, where it is combined with a large per-centage of carbonate of lime, reaching even to 80 per cent., or more; and the combination is so perfect, that the rock in this state long resists the action of muriatic acid. Less pure kinds contain sand, which is found to be injurious. The best kinds of asphaltic rock are converted into a plastic workable mastic in a short time, and at very little cost, merely by the addition of 6 or 8 per cent. of mineral or coal-tar, and a few pebbles, the union being effected in an iron cauldron at a very moderate heat, and the viscid mass placed on a prepared flat surface.

The advantages of this kind of pavement are its extreme toughness and power of resisting very considerable wear. Such a pavement absorbs no water, and makes very little dust.

It has, however, been long known; and, indeed, application of bitumen dates very far back in the history of civilization, as we find that it was commonly employed by the ancient Egyptians, and formed a solid and durable cement in the walls of Babylon.

Specimens of Seyssel Asphalte.

No. 1 I.

Two Samples; for Roofing.

No. 2 I.

One Sample, for Water Tank Lining.

Seyssel Asphalte Company, Stangate, Westminster.

No. 3 I.

Sample; Seyssel Asphalte.

Armani and Co., 6, Guildhall Chambers, Basinghall Street, E.C.

No. 4 I.

Sample of Metallic Lava.

Armani and Co., Manufacturers, 6, Guildhall Chambers, Basinghall Street.

No. 5 I.

Specimens of Coloured Lava.

The Mineral Rock and Seyssel Asphalte Company, 31, Cumberland Street, St. George's Road, Pimlico, S.W.

No. 6 I.

SPECIMEN OF ASPHALTE FLOORING, WITH A COLOURED BORDER.

Laid down 4th March 1861.

The Mineral Rock and Seyssel Asphalte Company, 31, Cumberland Street, St. George's Road, Pimlico, S.W.

Henry Broughton, Manager.

No. 7 I.

SPECIMENS OF TRIALS OF MATERIALS FOR COLOURING ASPHALTE FLOORS.

The Mineral Rock and Seyssel Asphalte Company, 31, Cumberland Street, Pimlico, S.W.

No. 8 I.

A SERIES OF TRIALS OF MATERIALS FOR COLOURING ASPHALTE FLOORS.

Laid down in October 1861.

The Mineral Rock and Seyssel Asphalte Company, 31, Cumberland Street, Pimlico, S.W. Henry Broughton, Manager.

NOTE.—These trials have been further developed in the Northern Arcades of the Gardens of the Royal Horticultural Society at South Kensington; the floors of which, exceeding an area of 60,000 feet, are laid in asphalte, coloured with various materials, and forming different patterns.

Specimens of Polonceau or Limmer Asphalte.

No. 9 I.

ONE SPECIMEN OF ORDINARY PAVING.

No. 10 I.

ONE SPECIMEN, AS APPLIED FOR STABLES, FLOORS, &c.

J. Pilkington, 15, Fish Street Hill, London, E.C.

No. 12 I.

ASPHALTE LAMINÉ, BY AUTOMEYER, PARIS.—1855.

A material by Messrs. Automeyer, of Paris, is deserving of notice. It is called "bitume laminé," and is proposed for roofing flats, and, in fact, for all roofing purposes for which lead or zinc is now employed, such as the covering of domes or cupolas, flashings, gutters, &c., and, with the exception of its non-capability to resist the action of fire, seems well adapted for that kind of work.

A small summer-house was shown covered with it, and was made in the most irregular forms, apparently with a view of showing the facility with

which the material could be employed; and although it was exposed through the whole summer to the intense heat of a Paris sun, it never at any time showed any symptoms of becoming soft, nor did it even in the parts where it covered the perpendicular sides of a small erection exhibit at the close of the summer any traces of having run or altered in form or in any other respect. It is a preparation of asphalte in the form of sheets, which can be procured of several thicknesses and widths, of any length (that exhibited being about a yard wide and three-sixteenths of an inch thick), and is applied somewhat like sheet lead, the joints being made by slightly melting or softening the parts to be joined by a hot iron. It might, perhaps, be employed with advantage as a substitute for lead in lining water-tanks or cisterns, and, in fact, in any situation where lightness and cheapness was an object. In the two qualities of lightness and facility of application it has a decided advantage over the former material.

No. 13 I.

Specimen of Tar Pavement.

W. Wright and Co., Patentees, 32, Bucklersbury, E.C.

Note.—The Marble Tar Pavement has been extensively employed for roadways in the Royal Arsenal at Woolwich, and at Keyham Dockyard. Its price varies according to the thickness of the material laid down; 2½ inch thick pavement costs 2*s.* 3*d.* per square yard; 4-inch, 3*s.* 6*d.*; 6-inch, 4*s.* 6*d.*; 9-inch, 5*s.* 6*d.* It is applicable for floors, yards, footpaths, railway platforms, &c.

No. 14 I.

Specimens of Bitumen used for Floors, &c.

No. 16 I.

Specimens of Patent Bituminized Paper Pipes.

For the conveyance of water, gas, and drainage.

The Patent Bituminized Water, Gas, and Drainage Pipe Company, 14 a, Cannon Street, City, London, E.C.

Note.—These patent pipes have been in use on the continent during the last three years, and those employed in Paris for the conveyance of gas have been found to be as perfect as when first laid down.

Their weight is about one-fifth that of iron pipes, and their price about one-half. They have been tested up to a pressure of 220 lbs. to the square inch, equal to 506 feet, head of water.

The pipes are made in 7 feet lengths, and are connected by collar joints of the same material as the pipes, or they can be fitted with iron flanged sockets, and screwed together by nuts and bolts.

The price per yard, for 2-inch pipes is 11*d.*; for 3-inch, 1*s.* 4*d.*; 4-inch, 1*s.* 11*d.*; 5-inch, 2*s.* 9*d.*; 6-inch, 3*s.* 6*d.*; 7-inch, 4*s.* 3*d.*; 8-inch, 5*s.*; 9-inch, 5*s.* 10*d.*; 10-inch, 6*s.* 10*d.*; 12-inch, 8*s.*

Section J.

IRON, CAST AND WROUGHT.

Brass and Metal Work.

Note.—Casting in iron forms a large and important branch of industry wherever the advantages of iron and fuel are possessed to an adequate extent. Owing to the variety of coalfield, abundance of the mineral, and improved modes of smelting, England is distinguished above other nations for the exuberance and cheapness of her supply of iron, and for the extent to which it is employed in casting. If, however, the quality of articles by casting be considered, those of France, Belgium, Prussia, and Austria will prove that she has powerful rivals to contend with in that respect. The iron castings from these countries display a sharpness, cleanness, and closeness of texture and a good taste and intelligence in design, which affords much reason to doubt whether any pre-eminence can be accorded to this country, except so far as mere quantity is concerned. It is of course not to be forgotten that the comparison can only be made within certain limits. The iron castings of this country, if the comparison be confined to objects of a similar character it is believed that the palm of superiority must be assigned to the Continental; which, on the whole, are distinguished more highly for skilful casting and intelligent and appropriate designs.

The iron casting of the United Kingdom, though already, as has been observed, of great extent, might doubtless be more largely employed for purposes both of use and ornament. It is probable that the expense of new moulds, the difficulty of obtaining appropriate designs, and a prejudice existing against iron on account of its liability to fracture and oxidation (though the latter fault may possibly be obviated), present in many cases obstacles to its more extensive use in construction and decoration. That it is susceptible, in casting, of the most perfect and sharp impressions, is clearly evinced by many examples. The successful rendering of Mr. J. Bell's statue of "The Eagle Slayer" (outside the building) by the Coalbrook Dale Company, shows that the cost of many public monuments might be reduced by bringing into use as a substitute for bronze a material cheaper than zinc, and more easily procured in this country.

No. 1 J.

Iron Skylights and Sashes.

John Maxwell, Stakeford Foundry, Dumfries.—1851.

No. 2 J.

PATENT WROUGHT-IRON WINDOW SASHES AND SKYLIGHTS.

S. N. Jackson, the Patent Wrought-iron Window Company, 5, Maudlin Street, Bristol. *See* Advertisement.

No. 3 J.

PATENT, WATER-TIGHT, WROUGHT-IRON WINDOW SASH.

Burt and Potts, Patentees, 38, York Street, Westminster.

No. 4 J.

CAST-IRON VENTILATING WINDOWS.

George Hurwood, Ipswich, Suffolk. *See* Sec. M., No. 30.

No. 5 J.

WARNER'S PATENT CAST-IRON VENTILATING FRAMES.

J. Warner and Sons, 8, Crescent, Jewin Street, London, E.C. *See* Advertisement.

No. 6 J.

WATER-CLOSET.

Guest and Chrimes, Rotherham Brass Works. Rotherham. —1851.

No. 7 J.

PATENT VALVE WATER-CLOSET ARRANGEMENT.

J. Tylor and Sons, Makers and Patentees, Warwick Lane, Newgate Street, E. C.

No. 8 J.

PATENT PAN, WATER-CLOSET ARRANGEMENT.

J. Tylor and Sons, Warwick Lane, Newgate Street, E.C.

NOTE.—These closets are fitted with a regulating valve, which ensures a certain supply of water, and which can be set for any desired quantity.

No. 9 J.

PATENT VALVE, WATER-CLOSET ARRANGEMENT.

F. G. Underhay, Maker and Patentee, Crawford Passage, Clerkenwell, E.C.

No. 9a J.

PATENT PAN, WATER-CLOSET ARRANGEMENT.

F. G. Underhay, Maker and Patentee, Crawford Passage, Clerkenwell, E.C.

No. 10 J.

ILLUSTRATIONS OF PATENT VALVE ARRANGEMEMTS FOR WATER SUPPLY TO CLOSETS, UNDER HIGH PRESSURE.

F. G. Underhay, Maker and Patentee, Crawford Passage, Clerkenwell, E.C.

NOTE.—These closets and regulating valves are adapted for the supply of water direct from the main service pipes of houses.

They can be regulated by setting an air valve, to ensure any desired supply of water.

No. 10a J.

CAST-IRON D TRAP FOR DRAINS, &c.

F. and G. Rosher and Co., Ward's Wharf, Blackfriars, S.

NOTE.—This trap is constructed to prevent any effluvia arising when the grating is removed.

No. 11 J.

LOWE'S PATENT EFFLUVIA TRAP GRATINGS OR GRIDS.—VARIOUS SIZES.

Alice Lowe, and Co., Salford, Manchester.—1851.

No. 11a J.

EFFLUVIA TRAP FOR STREET DRAINS, &c.

It can be easily fixed, or moved without displacing the brickwork on which the grating rests.

Major Pratt, inventor.—1851.

No. 12 J.

PATENT CAST-IRON SANITARY KITCHEN SINKS, with Effluvia Traps.

A.	*Ditto*	*ditto*	Galvanized.
B.	*Ditto*	*ditto*	Enamelled.

John Jones, 6, Bankside, London. *See* Advertisement.

No. 13 J.

PATENT, CAST IRON EFFLUVIA TRAP—GALVANIZED.

Tye and Andrew, 5, Spencer Place, Brixton Road, S. See No. 57 M. *See* Advertisement.

No. 14 J.

GURNEY'S PATENT STOVE, CAST IRON.

The London Warming and Ventilating Company, 26, Great George Street, Westminster, S.W.

NOTE.—The vertical iron plates around the stove radiate the heat imparted to them by the fire, and the pan at bottom, in which they stand, is

filled with water, which, by its gradual evaporation, moistens the heated air. The stoves are made in four different sizes :—

				£	s.	d.
D. size, to warm	15,000	cubic feet, price	- -	8	0	0
C. „ „	30,000	„ „	- -	14	0	0
B. „ „	70,000	„ „	- -	25	0	0
A. „ „	120,000	„ „	- -	35	0	0

For heating larger areas than the above, two or more stoves must be employed. The consumption of fuel being slow, the cost for firing is very trifling.

No. 15 J.

HOT WATER BATTERY, CAST IRON.—Woodcock's system.

The London Warming and Ventilating Company, 26, Great George Street, Westminster, S.W.

NOTE.—The working of this invention is similar to that of the Gurney stove. The plates radiate the heat imparted to them by the hot-water pipe, and the pans in which they stand are for water to moisten the atmosphere.

No. 16 J.

PATENT SELF-CLEANSING CHIMNEY COWL, TINNED IRON.

John Faulkner, 62, St. Martin's-le-Grand, E.C.

See Advertisement.

NOTE.—These cowls are kept in stock, of the following sizes and prices : 9, 10, and 11-inch cowls, 14*s.*; 12-inch cowls, 15*s.* each.

No. 17 J.

HAGAN'S PATENT CHIMNEY TOPS.

H. W. Gates, 67, Westminster Bridge Road, Lambeth.

NOTE.—These chimney tops are made in 3 sizes, at the following prices :—No. 1 size, 30*s.*; No. 2 size, 35*s.*; No. 3 size, 40*s.*; and can also be fitted to existing chimney pots.

Patentee (Charles Hagan), Clerk of Works, Tower of London, E.C.

No. 18 J.

ILLUSTRATION OF IRON HOUSE CONSTRUCTION.

C. W. Tupper and Co., 61½, Moorgate Street, E.C.

NOTE.—This illustration is intended to show the construction of iron houses, either in wood and iron, or entirely in iron. One half of it is fitted and finished upon a wooden framing, and the other half upon a framing of galvanized angle iron.

The interior lining is left open in various places, to show the modes of fitting the framings. The window sash, door way, ventilators, &c., illustrate the usual fittings and finishings of iron houses generally.

No. 19 J.

PAVEMENT OF CAST IRON.—Knapp's Patent, for Roadways, Yards, &c.

J. Crook, Agent, 73, Coleman Street, City, E.C.

NOTE.—A portion of King Street, Westminster, and of Cheapside, is paved on this principle.

No. 20 J.

MURAL DRINKING FOUNTAIN.—"Boy and Shell."

Designed by John Bell, Sculptor.

Manufactured by the Coalbrook Dale Iron Company.—Price 15*l.*

No. 22 J.

ILLUSTRATION (full size) of FLOORING on I rolled or wrought iron, flanged joist, as commonly practised in Paris.

Designed by M. Bleuze, Paris.—1855.

NOTE.—This method was first applied in February 1849, in the flooring of a house in Paris, No. 18, Boulevard des filles du Calvaire, for a bearing of 18 feet.

No. 23 J.

MODEL OF A SINGLE STORY, showing FLOOR construction of rolled iron girders and joists. French system.—1855.

Designed by M. Creuzot. Executed by M. Liandier, 78, Rue des Marais, Paris.

No. 24 J.

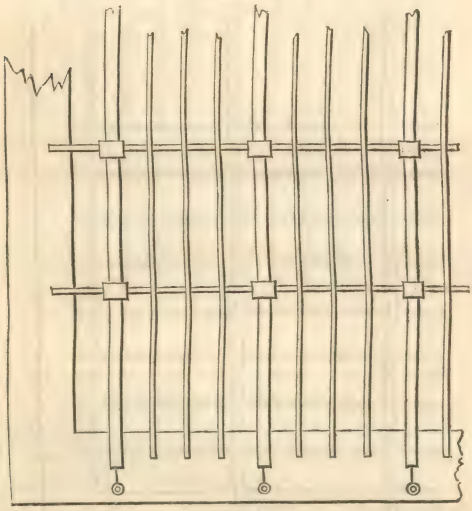
SIX SPECIMENS (full size), illustrating M. Creuzot's method of connecting the girders and joists. French construction.—1855.

NOTE.—The principle of the substitution of rolled iron for wood having now been established, numerous modifications were proposed in the manner of its application and arrangement, as to the ties, struts, and connexion with the remaining parts of the floor and ceiling, for both which a variety of methods of construction have been from time to time adopted, and of which some of what are considered the best forms are here described.

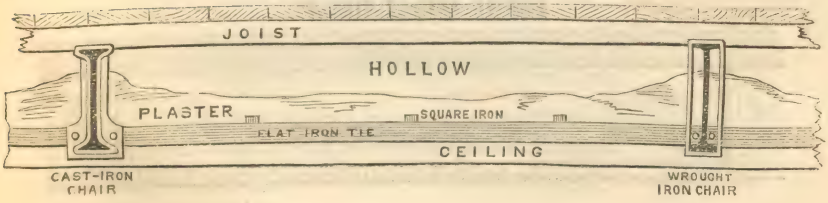
The first has the girders of I shape, slightly arched, having a rise of ·06 inches in each foot, placed at a distance of 3 feet 3 inches from centre to centre, and connected at intervals of 3 feet 3 inches throughout their length by ties of flat bar iron on edge, resting on the lower flange of the girder and fastened one to another either by wrought-iron straps or cast-iron chairs. Upon these ties are placed square bars, three between each pair of girders, running parallel to them from wall to wall, into which their ends, turned down, are built. The girders are further tied to the walls at each end by iron straps fastened to vertical iron bolts in the wall, and in a lateral direction by the ends of the cross ties being also built in in the same way as the longitudinal bars. On the iron frame-work so formed the thick plaster ceiling is formed without wooden laths, a wooden platform being held under it while the plaster is thrown in from above, and removed after it has firmly set. Small square wooden joists are laid over the girders, and the wooden floor laid on these in the ordinary way.

METHOD No. 1.

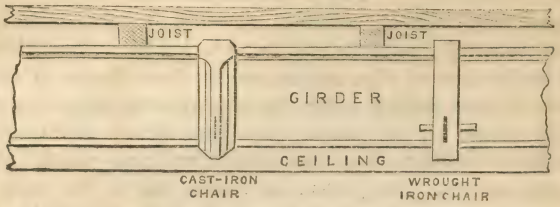
PLAN.



SECTION ACROSS THE GIRDERS.



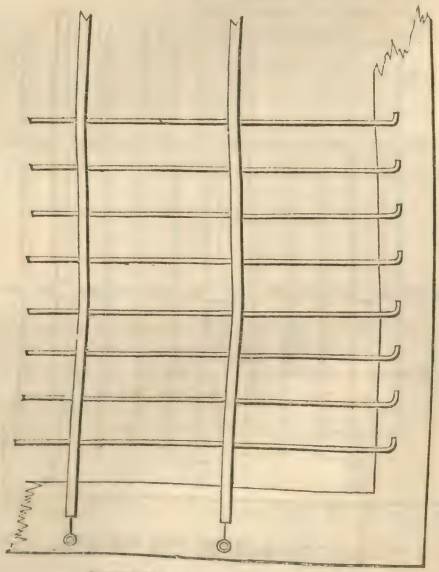
LONGITUDINAL SECTION.



In the second method described, the I girders are also placed at from 3 feet to 3 feet 3 inches from centre to centre, and are tied, or rather shutted, at intervals of one foot by small square bars, reaching from girder to girder, and resting on the lower flange, having their ends turned up in an elbow the height of the web of the girder, and kept upright merely by the plaster with which they are filled in; this, as will be seen at once, is the most simple of these methods, but it is deficient in the ties with which the others are strengthened.

METHOD No. 2.

PLAN.



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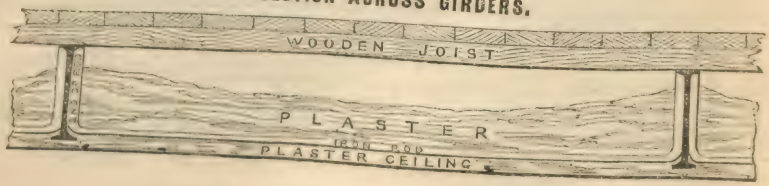
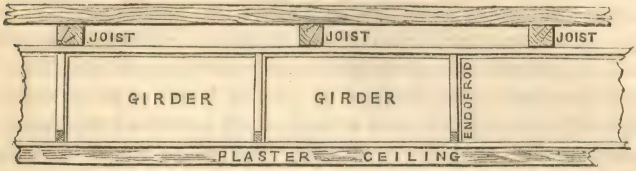


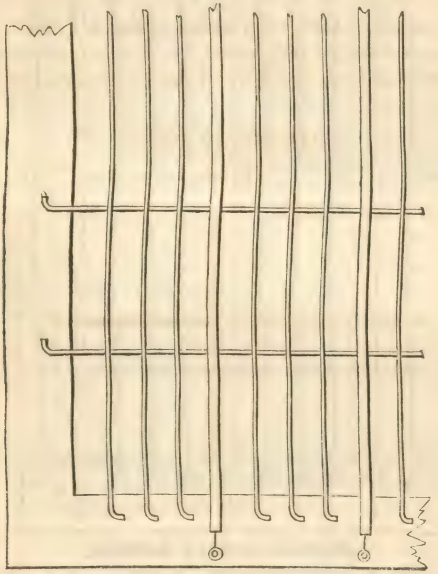
SECTION ALONG GIRDERS.



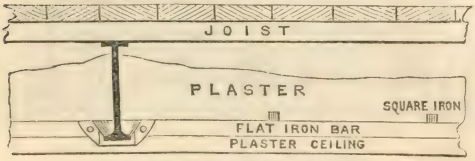
The third method differs from the first merely in the manner in which the cross-ties are connected together, being a simplification of the chair already described.

METHOD No. 3.

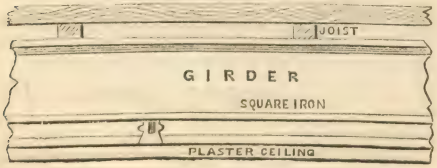
PLAN.



SECTION ACROSS GIRDERS.



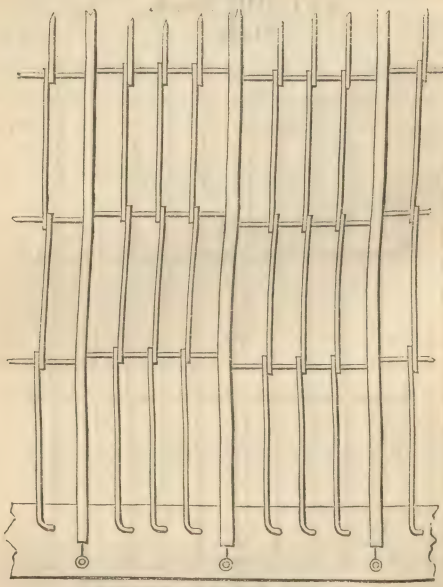
SECTION ALONG GIRDERS.



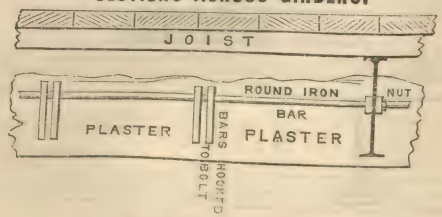
The fourth method is that which has generally had the preference among the principal builders; in it the girders are tied together in pairs, at 3 feet intervals, by round iron bolts $\frac{6}{10}$ths of an inch in diameter, passing through holes at the neutral axis of the girder, and nutted up at each end. Small square bars are hung on to these tie-bolts by hooks at their extremities, of sufficient length to permit them to hang nearly level with the bottom of the girders to which they are parallel, as described in the first method, the description of the floor and ceiling of which answer for all four methods.

METHOD No. 4.

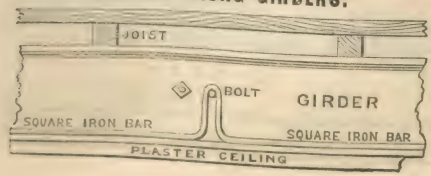
PLAN.



SECTIONS ACROSS GIRDERS.



SECTION ALONG GIRDERS.



In speaking of the gradual development and improvement in form of the rolled iron girder, an allusion was made to forms now in use in Paris which are considered superior to the section commonly employed, of which the four methods above are applications. These were exhibited by M. Zorés along with the collection of hollow bricks by M. Borie, and were of two forms, called by the inventor "fer tubulaire" and "fer à coulisse," the first being, perhaps, more strictly speaking a girder, and the latter a joist, where only a single floor is required.

No. 25 J.

SPECIMEN OF FRENCH FLOORING constructed with A rolled iron girders, invented by M. Zorés, and called by him "fer tubulaire," showing wooden joist and flooring.

The "fer tubulaire" may be described as being in section of the form of a capital A without the small triangular top. Those exhibited are said to be for a bearing of 20 feet, and are of the following dimensions, viz. $4\frac{3}{4}$ inches high, $2\frac{3}{8}$ inches wide at top, 4 inches wide at bottom, exclusive of a small flange of $\frac{3}{4}$ inch projection on each side. The sides of the girder are three-tenths of an inch in thickness, and the top and flanges seven-twentieths. These girders are placed at a distance apart of 2 feet 8 inches from centre to centre, and are tied together at intervals of three feet by flat bar iron ties of $\frac{3}{4}$ inch by $\frac{3}{10}$ inch, bolted to the bottom of the flanges, and the flooring finished according to one of the following methods :—

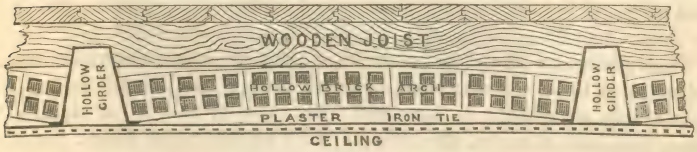
METHOD No. 1.—Flat arches of hollow brick between the girders, with joists of "fer à coulisse" (hereafter described) or of wood, and wooden flooring, or for passages with the spandrills filled in with plaster and floored over with tiles, ceiled underneath to soffit of flat arch.

METHOD No. 2.—The spaces between the girders filled in with hollow blocks of plaster 4 inches deep. Flooring and ceiling as in No. 1.

METHOD No. 3.—Wooden flooring as in No. 1, with ceiling on small iron laths; hollow between floor and ceiling.

METHOD No. 4.—Wooden flooring without ceiling.

SECTION ACROSS GIRDERS.



LONGITUDINAL SECTION.

SHOWING WOODEN JOIST. SHOWING JOIST OF "FER À COULISSE."

The girders of this section are said to possess the following advantages over those of the I form commonly used; first, with equal weight they give a strength or resistance nearly double, as ascertained by the following experiment: a girder of this form, 20 feet in length, $4\frac{3}{4}$ inches in depth, and weighing 9·5 pounds the foot, deflected 2·34 inches with a load on its centre of 3 tons. A girder of the I form, 20 feet long, $8\frac{1}{2}$ inches in depth, weighing 16·9 pounds the foot, deflected 2·49 inches with the same weight. Again, on the score of economy, a floor of 20 feet square, calculated to bear a weight of 200 lbs. on the square foot, exclusive of the weight of flooring, costs in Paris *9l. 6s. 10d.* per square, including everything, when executed with the I rolled iron girder; and a floor similar in all respects, but having the girder "fer tubulaire" substituted for the I, costs but *7l. 9s. 5d.* per square.

Another great advantage that this form of joist has over that in ordinary use in Paris is, that it does not require any strutting, while the I girder requires lateral pressure to such an extent that it is said not to be employed to the best advantages unless absolutely filled in with either hollow brick arches or plaster, more than half of its strength being dependent on its lateral rigidity.

No. 26 J.

Specimen of French Flooring, constructed ⊤ with wrought or rolled iron girders, invented by M. Zorés, and called "fer à coulisse," and hollow bricks, showing the method of laying tile or boarded floor.

The other form of girder, or rather joist, viz. the "fer à coulisse," exhibited by M. Zorés, is said to be the invention of a M. Chibou.

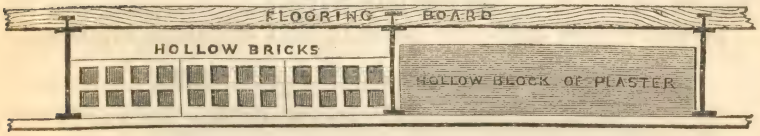
It is of the form of the I or double T girder, but with the addition of a second upper flange, longer than the first, and close to it. The dimensions of the specimens exhibited are, girders $5\frac{1}{2}$ inches deep, top and bottom flanges 1 inch wide, third flange $\frac{5}{8}$ of an inch below the top one, and $1\frac{5}{8}$ inch wide, and the thickness of the web and all three flanges alike, viz. $\frac{3}{16}$ of an inch. A girder of this section weighs 3·6 pounds the foot.

These girders are placed closer together than those just described, viz. at a distance of 1 foot 8 inches from centre to centre, and are said to possess considerable advantages as compared with those of the I or double T form; first, as to strength, the addition of the second upper flange, from its position so close to the first, may be said to form in conjunction with it one flange, having nearly the same resistance to the compressive force exerted above the neutral axis as if it were a single top flange, and coming very near to that which has been laid down by Mr. W. Fairbairn, as the best proportion between the top and bottom flanges of malleable iron girders; while at the same time its exerts a considerable influence in stiffening the girders in a lateral direction, and thus materially tends to remedy the defect spoken of above, of being liable to torsion or twisting under heavy strains,

unless well strutted or filled in solid with brick, plaster, or other material. A second advantage claimed for this section of girder is, that it affords a means of laying flooring at once on the iron without the intervention of joists, and without the employment of nails; and this is effected in a very neat way by having each end of the oak batten, of which the parquet or French flooring is formed, ploughed with a tolerably deep groove, into which the top flange of the girder fits, the lower side of the batten resting on the second or broad flange, and its upper surfaces meeting over the centre of the top flange, which is thus effectually hidden; and this method is not only more economical in the first instance, but has the additional advantage of rendering it impossible for any board of the floor to get out of level or start up, and also to give the means of removing the whole or any part of the floor at any time, and relaying it without the slighest injury, and also of tightening it up in case of any shrinkage of the wood. The facilities for laying a floor in this way are much increased by the French method of flooring with oak in short lengths, and in a kind of herring-bone pattern called "point de Hongrie."

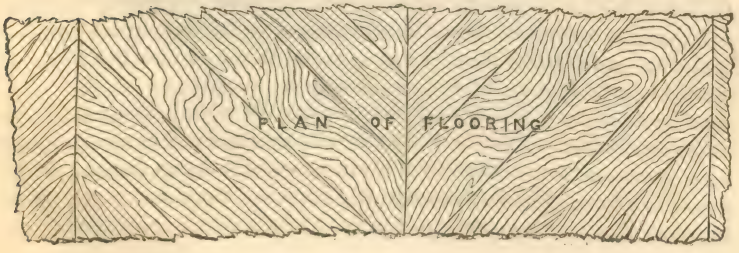
I.

SECTION ACROSS THE GIRDERS.



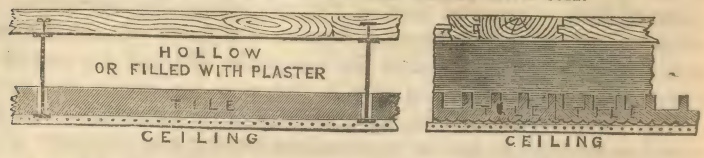
II.

LONGITUDINAL SECTION,
SHOWING METHOD OF FILLING IN WITH HOLLOW BLOCKS OF PLASTER.



III.

SECTIONS SHOWING PROPOSED FILLING WITH TILE.

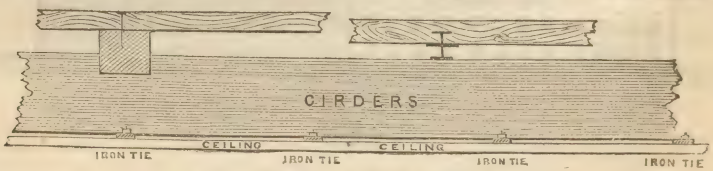


NOTE.—A smaller section of "fer à coulisse" which he employs for joists, and in which the web is reduced to $1\frac{1}{2}$ inch in depth, the third flange being exactly midway between the top and bottom, and the dimensions of all three flanges being the same as in the girders, viz. 1 inch, $1\frac{5}{8}$ inch, and 1 inch; these he uses with the "fer tubulaire" girders instead of the wooden joists mentioned above; and in this case the flooring is also laid without nails, in the manner described for the girders "à fer à coulisse." An additional advantage possessed by the girders and joists of these sections is, that a strong floor is obtained with a very much less sacrifice of space. (See No. 16 J.)

IV.

LONGITUDINAL SECTION.

SHOWING WOODEN JOIST. SHOWING JOIST OF "FER À COULISSE."



No. 27 J.

ILLUSTRATION (full size) of M. Zorés' JOIST, of "fer à coulisse," carrying herring-boned oak floor. See No. 16 J.

NOTE.—All these illustrations of French systems of floor construction were procured at the Paris Universal Exhibition of 1855 at its close.

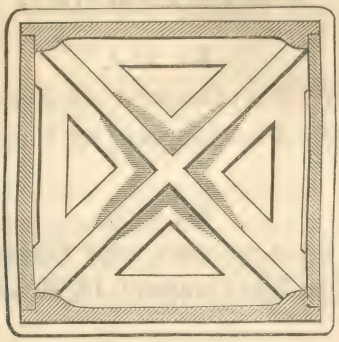
No. 28 J.

SPECIMEN OF ROLLED IRON GIRDER without rivets.—French.

A girder or bressummer from the manufactory of Creuzot, which consists of two flat bars of plates of rolled iron $9\frac{3}{4}$ inches deep by $\frac{5}{8}$ inch thick, placed parallel to each other on their edges, and kept at a distance of 12 inches apart by flat plates $\frac{1}{2}$ inch thick, fitting into rabbets in the first-named pieces at top and bottom. These four sides are further sustained in a rectangular form by the insertion at intervals of about a foot of cast-iron frames, in the form of a rectangle with its diagonals, and at each of these frames the girder is hooped round with a wrought-iron band 3 inches wide and $\frac{1}{2}$ inch thick.

The whole thus forms a very strong wrought-iron box girder, without the use of a single rivet.

SECTION OF SINGLE GIRDER.

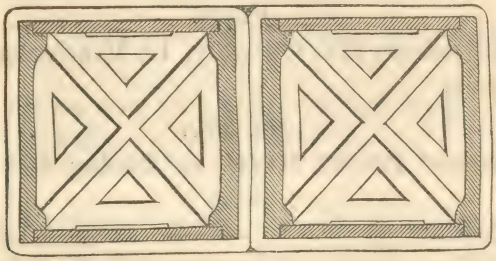


No. 29 J.

SPECIMEN OF ROLLED IRON DOUBLE GIRDER OR BRESSUMMER without rivets. (French.) Similar in character to the last.

Another girder, similar in construction, but double, being formed of two separate ones, such as that just described, but only 8 inches wide instead of 12 inches; the two are hooped together with wrought-iron bands, forming a bressummer of about 18 inches in width from out to out.

SECTION OF DOUBLE GIRDER, OR BRESSUMMER.



Procured at the Paris Exhibition.—1855.

No. 30 J.

ORNAMENTAL IRON CASTINGS.—French work.

For balconies, window fronts, &c.

From the Paris Universal Exhibition of 1855.

No. 31 J.

PANEL IN CAST IRON, BRONZED.—French work.

A copy from the bronze doors of the church of St. Vincent de Paul, Paris.

From the Paris Universal Exhibition of 1855.

Brass and Metal Work.

No. 32 J.

MODELS OF (Italian) CORRUGATED ZINC.—For Roofs.

Vieille Montagne Zinc Company, 12, Manchester Buildings, Westminster.

No. 33 J.

MODEL OF ROOF COVERED WITH CORRUGATED ZINC.

Vieille Montagne Zinc Company, 12, Manchester Buildings, Westminster.

No. 34 J.

MODEL, full size, of a Roof covered with Zinc, to imitate Italian Tiling.

Vieille Montagne Zinc Company, 12, Manchester Buildings, Westminster.

No. 35 J.

MODEL ILLUSTRATING METHOD OF CONSTRUCTING ZINC FLATS.

Vieille Montagne Zinc Company, 12, Manchester Buildings, Westminster.

No. 36 J.

WETTERSTEDTS' PATENT METAL, for Roofing, and other purposes.

Manufactured by W. W. and R. Johnson and Sons, 4, Waterloo Place, Limehouse, London, E.C. *See* Advertisement.

NOTE.—This patent material has been used successfully for covering the roof of the Royal Military Repository, Woolwich; the Polytechnic Institution, Regent Street, and several of the stations on the Eastern Counties Railway. The metal is manufactured in sheets, from 9 ft. by 3 ft., to 8 ft. by 2 ft. 6 in. Its price varies from 31*s.* to 38*s.* per cwt., according to the weight per square foot.

It is applicable for stair covering, wall lining, and all kinds of flats, roofs, &c.

No. 37 J.

GUN METAL FIRE PLUG, WITH HOSE NOZZLE, AND STOP-COCK.

J. Tylor and Sons, Warwick Lane, Newgate Street, E.C.

No. 38 J.

SERIES OF BRASS VALVES; PATENT DIAPHRAGM TAPS; COPPER FLOAT-BALLS, &c., Fittings for Water Supply, to Houses and Buildings.

J. Tylor and Sons, Manufacturers, Warwick Lane, Newgate Street, E.C. *See* Advertisement.

No. 39 J.

2 Cases. BRASS FITTINGS.

For various Purposes in fitting Houses, Shops, &c.

W. Tonks and Sons, Brass Foundry and Tube Works, Moseley Street, Birmingham. *See* Advertisement.

No. 40 J.

1 Case. PATENT WIRE ROPE.—For Sash Lines, &c.

R. Newall and Co., 130, Strand, London.

No. 41 J.

SPECIMENS OF GARDEN FLOWER BOXES, made with Cast-iron Frames, Porcelain Tile Sides, and Lined with Zinc.

W. Baily and Sons, Makers, 71, Gracechurch Street, E.C.

No. 42 J.

FLOWER BOX OF ZINC, WITH ORNAMENTAL TILE, SIDES AND ENDS.—For use on Window Sills, &c.

F. and G. Rosher and Co., Ward's Wharf, Upper Ground Street, Blackfriars, S.

No. 43 J.

1 Case. CABINET MAKERS' AND JOINERS' TOOLS.

J. V. Hill, 5, Chichester Place, Gray's Inn Road, London.

No. 44 J.

ORNAMENTAL DRAWING-ROOM GRATE, WITH FIRE BRICK BACK, PATENT DAMPER, AND BRIGHT STEEL HEARTH PAN.

W. H. Thomas, 6, Sloane Street, Chelsea, S.W. Price, 10*l.* 10*s.*

No. 45 J.

ORNAMENTAL DINING-ROOM GRATE, WITH FIRE BRICK BACK, AND PATENT DAMPER.

W. H. Thomas, 6, Sloane Street, Chelsea, S.W. Price, 7*l.* 7*s.*

No. 46 J.

KITCHEN RANGE, WITH OPEN FIRE-PLACE AND SLIDING CHEEK, BOILER, AND WROUGHT IRON OVEN.

W. H. Thomas, 6, Sloane Street, Chelsea, S.W.

The oven is heated equally on all sides, by the fire, the heat of which is conducted round it by a flue arranged for the purpose. Price, 15*l.*

No. 47 J.

COTTAGE KITCHEN RANGE, WITH OPEN FIRE-PLACE AND FIRE-CLAY BACK, AN OVEN AND BOILER.

W. Pierce, 5, Jermyn Street, Regent Street. Price, 54*s.*

No. 48 J.

COTTAGE KITCHEN RANGE, WITH OPEN OR CLOSED FIRE-PLACE, GALVANIZED IRON BOILER, AND OVEN.

Length, 4 ft.; breadth, 1 ft. 4 in. Price, 2*l.* 10*s.*

Bradshaw and Sansom, Makers, Mansfield. Agents, Clark and Hunt, 159 Shoreditch, E.C.

No. 49 J.

COTTAGE KITCHEN RANGE, WITH OPEN OR CLOSED FIRE-PLACE, BOILER, AND OVEN.

Length, 3 ft.; breadth, 1 ft. 2 in. Price, 2*l.* 5*s.*

Bradshaw and Sansom, Makers, Mansfield.

No. 50 J.

ORNAMENTAL DRAWING-ROOM GRATE, "THE VESTA," PATENT CONCAVE POLISHED STEEL SIDES, DAMPER, &c.

Clark and Hunt, 159, Shoreditch, E.C. Price, 10*l.* 10*s.*

No. 51 J.

ILLUSTRATION OF ITALIAN WROUGHT IRON AND JAPAN WORK.

NOTE.—This wash-stand, fitted with looking-glass, two metal drawers, sponge rack, and ewer stand, was purchased in 1861 for 38 francs (32*s.*) from Pasquale Franci, the manufacturer, at Sienna.

Section K.
WOODS OF CONSTRUCTION.

Note.—In examining the comparative value of different sorts of wood, it is of the first importance to ascertain the nature of the encrusting matter deposited throughout the cells and tubes of the wood. For all practical purposes those woods appear to be best in which the cells are lined with resinous matter; those filled with hygroscopic gummy matter are, for the most part, of less value; they are seasoned with difficulty, and are always more liable to decay. The best woods are those having a strong fibre, protected from all external influences by a coat of resinous matter, or at least of a matter insoluble in water, and one which does not attract atmospheric moisture.

In connexion with the various collections of wood, attention must be paid to the different processes for seasoning and preserving it from the influence of the weather, dry rot, and the attacks of insects, boring worms, &c. These and other causes form very serious obstacles to the use of wood for many purposes; and accordingly several plans have been patented, having for their object the prevention of timber from decay by injecting certain fluid substances into its pores, and by chemical and mechanical action preventing the growth of fungi, viz. :—Mr. Ryan's patent in 1832, for impregnation with corrosive sublimate; Sir W. Burnett's in 1836, for injecting chloride of zinc; Mr. Bathell's in 1838, for impregnation with oil of tar; and Mr. Payne's in 1841, for impregnation with metallic oxides or alkalies.

No. 1 K.

Collection of English Forest and Park Woods.

S. Cross, Timber Merchant.—1851.

No. 2 K.

Section of Wych Elm.—Scotland.—1851.

No. 3 K.

Plank of Scotch Fir.—1851.

No. 4 K.

Specimen of Walnut Wood.—Limerick, Ireland.—1851.

No. 5 K.

Specimens of Woods, from Ireland.—1851.

No. 6 K.

Specimens of Bog Woods, from Ireland.—1851.

No. 6a K.

Specimen of Evergreen Oak—Quercus Ilex.

Presented by Messrs. Pulsford and Saxby, Cabinet Makers, 4, High Street, Kensington, S.W.

No. 7 K.

Specimens of Mouldings and Panels cut by Machinery.

John Blizard, Cheltenham.—1851.

No. 8 K.

SPECIMENS OF ORNAMENTAL WOOD MOULDINGS.

Smith and McGaw, Manufacturers, Belvedere Road, Lambeth.

No. 9 K.

SPECIMEN OF WOOD CARVING.

Executed by A. L. Bulletti, 78, Grey Street, Newcastle-on-Tyne, late Director of the carving Studio, Alnwick Castle. Agent, J. Young, New Inn Buildings, Strand, W.C.

No. 10 K.

SPECIMENS OF ARROWSMITH'S SOLID PARQUET FLOORS, (Patented.)

The several pieces are grooved and tongued together, and are solid, so that both sides are alike. The floors are one inch in thickness, and their cost, from 1*s.* per foot.

Messrs. Arrowsmith, 80, New Bond Street, S.W.

No. 11 K.

ENGLISH WOODS, subjected to Payne's Patent Preserving Process.—1851.

No. 12 K.

WOODS, subjected to Sir Wm. Burnett's Preserving Process.—1851.

Colonial Woods.

No. 13 K.

COLLECTION OF WOODS, from Canada, comprising Ash, Butter-nut, Bass-wood, Iron-wood, Maple, Oak, Black Walnut, and Spruce.—1851.

The butter-nut and black walnut are excellent furniture woods, and hardly seem to be so well known or appreciated as they deserve.

No. 14 K.

COLLECTION OF WOODS, FROM INDIA.—1851.

No. 15 K.

BLACK WOOD.—INDIA.—1851.

No. 16 K.

SMALL SAMPLES OF WOODS FROM INDIA.

Presented by W. Batten, Esq., Barton Hill House, Shaftesbury.

NOTE.—These woods are from the Presidency of Bombay, and are there used for various railway purposes.

No. 17 K.

Collection of Ceylon Woods.—1851.

1. Aboo - - A soft, though fine, but not very close-grained, light wood.
2. Alosboa - - A rather soft, coarse, open-grained, but not very light wood.
3. Cahamilile - A very hard, fine, close, even-grained, heavy wood.
4. Calamender - An exceedingly hard, fine, close-grained, heavy wood, of a pale reddish hue; with the heart and isolated elongate patches of an intense black.
5. Ceylon Teak - A rather hard, fine close-grained, and somewhat heavy wood.
6. Cochin Teak - A rather hard, though somewhat coarse and open-grained, moderately heavy wood, of a lighter hue, rather coarser texture, and considerably more ponderous than the Moulmein teak.
7. Cocoa-nut.
8. Dombe - - A soft, coarse, open-grained, light wood, bearing a strong resemblance to inferior Honduras mahogany, takes a good polish, and presents a pretty curled pattern; but, judging from this specimen, which is much worm-eaten, it cannot be a very durable wood, at all events in its native country.
9. Drapore - A hard, fine, rather close-grained, somewhat heavy wood.

10 & 11 missing.

12. Galmendora - A rather hard, very fine, but not close-grained, heavy wood.
13. Godepere - A rather hard, fine, close-grained, heavy wood.
14. Goorakieme - A soft, fine, but open-grained, light wood.
15. Hadiwicke - A moderately hard, fine, close-grained, rather heavy wood.
16. Hall - - A very soft, coarse, open-grained, light wood, evidently adapted only for very inferior work, and where durability is not required.
17. Halmendora - A fine, hard, close-grained, heavy wood.
18. Halmilile - A rather soft, though fine, but not very close-grained, heavy wood.
19. Hampalede - A rather soft, fine, though open-grained, heavy wood.
20. Hick - - A very hard, fine, close, very uniformly-grained, heavy wood, in colour resembling pencil cedar.
21. Horre - - A hard, though coarse, open-grained heavy wood.
22. Houn Kieriler A soft, fine, but open-grained, rather heavy wood.
23. Kadoll - - A rather hard, fine, close-grained, heavy wood. Specimen much worm-eaten.
24. Kadombairia A rather hard, fine, close-grained, somewhat light wood; its surface curiously veined.

25. Kadoomba - A soft, though fine, close-grained, and rather light wood.
26. Katukende - A hard, fine, rather close-grained, heavy wood.
27. Kirepalle - A very soft, coarse, open-grained, light wood.
28. Koan - - A very hard, fine, close-grained, heavy wood.
29. Koesor Jack - A moderately hard, but rather coarse and open-grained, though heavy wood, of a beautiful saffron-yellow colour; emits a peculiar, but by no means unpleasant, odour.
30. Kuretia - - A hard, fine, close-grained, heavy wood.
31. Meeanmilile - A very hard, fine, close-grained, heavy wood.
32. Millele - - Probably specifically identical with Sapoomilile, with which it coincides in every respect. (Vide No. 43.)
33. Moulmein Teak.
34. (Missing.)
35. Namede - A rather hard, very fine, close-grained, heavy wood.
36. Nendoon - Hard, though coarse, open-grained, heavy wood.
37. Obbairia - Hard, rather fine, generally close-grained, presenting, however, many open cells; heavy.
38. Palmira - - A species of palm.
39. Paloo - - A hard, fine, close-grained, heavy wood; heart-wood, deep red brown, recent layers reddish yellow; its compact, even structure indicates that it is admirably adapted for turnery work.
40. Patta Dell - A soft, coarse, open-grained, light wood.
41. Pelan - - A very hard, fine, close-grained, heavy wood.
42. Sapoo - - A soft, firm, but rather open, though even-grained light wood.
43. Sapoomilile - A soft, rather coarse, open-grained, light wood.
44. Sattin - - A hard, fine, close-grained, heavy wood.
45. Sooriye - - A hard, though somewhat coarse and open-grained, heavy wood, of a deep chestnut colour.
46. Tamarind - An exceedingly hard, fine, close-grained, very heavy wood.
47. Tarine - - A hard, fine, close-grained, rather heavy wood, much resembling English birch.
48. Wanedile - A rather hard, fine, close, even-grained, heavy wood.

No. 18 K.

CEYLON PALM.—1851.

No. 19 K.

SPECIMEN.—TAMBOOKIE WOOD.—District of NATAL.—1851. South Africa.

No. 20 K.

SPECIMEN.—RED EBONY.—District of NATAL, South Africa. —1851.

No. 21 K.

SPECIMENS OF WOODS FROM THE GOLD COAST, AFRICA. Used for Building purposes in that Settlement.

Contributed by Sir J. F. Burgoyne, Bart., G.C.B., Royal Engineers, Inspector-General of Fortifications, War Office, Pall Mall.

NOTE.—Specimen No. 1. Llanthah.—This wood is much used by the natives, though it is rapidly destroyed by the bug-a-bug insect.

Specimen No. 2. Cedar.—This wood is harder than true cedar; it is easily wrought, and is well adapted for joiners' work; it can be procured in lengths of 12 and 14 feet, by 1 and 2 inches thick, in boards; and up to 18 inches wide.—Price 3*d.* per super. foot.

Specimen No. 3. Kushabah.—Is the best wood for joiners' and carpenters' work, and for joists and beams; it can be procured of any size up to 14 inches square, and is very durable. Boards 12 inches wide and 1 inch thick can be got at 3½*d.* per super. foot. Heavy scantlings at 4*s.* per foot, cube.

Specimen No. 4. Edoom.—This wood is durable for floors, but is not suitable for joists, as the ends when built into walls rapidly decay.—Price 3*d.* per foot, super. 1 inch thick.

Specimen No. 5. Broowee, Iron Wood.—The largest pieces of this wood do not exceed 6 inches square; it is only available for window sills, doors, and window frames, of a length of 4 feet; its cost would be 5*s.* per foot, cube.

Extract from report of Thomas Tickel, Colonial Engineer, Cape Coast, October 1860.

No. 22 K.

SPECIMENS OF WOODS FROM NEW SOUTH WALES, BRITISH GUIANA, AND JAMAICA.—1855.

For particulars and results of experiments on the strength of these woods, see Appendix.

No. 23 K.

COLLECTION OF WOODS FROM WESTERN AUSTRALIA.—1851.

No. 24 K.

COLLECTION OF WOODS FROM NEW ZEALAND.—1851.

No. 25 K.

WOODS FROM TASMANIA (Van Diemen's Land).—1851.

No. 26 K.

SPECIMENS OF WOOD FROM NEW BRUNSWICK (Miramichi).—1851.

No. 27 K.

WOODS FROM ST. DOMINGO.—1851.

Fourteen Specimens of Mahogany, and four Specimens of Espenillo or Satin Wood, from St. Domingo.

No. 28 K.

SATIN WOOD.—DOMINICA.—1851.

No. 29 K.

LANCE WOOD.—1851.

No. 30 K.

COG WOOD.—1851.

Foreign Woods.

No. 32 K.

WOOD OF CAROB TREE.—From Algarve, *Portugal*.—1851.

No. 33 K.

WOOD AZAROLEAR.—From Villa do Rey, near Setubal, Portugal.—1851.

No. 34 K.

SPECIMENS OF CORK—SPAIN.—1851.

No. 35 K.

SPECIMENS OF WOODS FROM RUSSIA.—1851.
Comprising Oak, Pine, Fir, &c.

No. 36 K.

SPECIMEN OF WOOD PAVEMENT—BELGIUM.—1851.

No. 37 K.

SPECIMENS.—DOUM PALM (Hypthæne Thebica).—Egypt.—1851.

No. 38 K.

DATE TREE—EGYPT.—1851.

No. 39 K.

SPECIMENS OF WOOD FROM ALGIERS (2 panels).—1851.

No. 40 K.

WOODS FROM CHINA—1851.—Amongst which are the following:—

1. Chung tu - - - - - - An inferior kind of pine.
2. Kan muh - - - - - - Wood of the coolie orange.

3. Kuin tien Kuh	-	A fine wood for cabinet work.
4. Kwang lang	Dryandra, sp.	Used for rhills of sedans.
5. Lan muh	Canarium pimela	Wood of the Chinese olive.
6. Ma me muh		A resinous pine.
7. Nan-chi-muh		A fine wood from Cochin China.
8. Plum wood		Used for cutting blocks, for books. (Rather coarse.)
9. Shui sha muh		Used for coffins.
10. Tau Kwa san	Peach flower, Pride of India.	Called "China mahogany" at Canton.
11. Tsung muh	Fir	Used for fuel and boxes.
12. Tu muh	Pine	Used for furniture.
13. Woo tung	Dryandra cordifolei	Wood used for musical instruments.

It is much to be regretted that these specimens are so small as scarcely to show the characters of the woods.

No. 41 K.

SPECIMENS OF WOODS FROM MEXICO.—1851.

No. 42 K.

COLLECTION OF VARIOUS WOODS FROM SIAM.—1856.

No. 1. Ebony.
No. 2. Scented Wood.
No. 3. Scented Wood.
No. 4. Red Wood, a dye wood.
No. 5. Lacca Wood, a dye wood.
No. 6. Yellow Wood.
No. 7. Sahan Wood.

No. 43 K.

BLACK THORN, Africa	obverse	These specimens are in the form of books, each side of a different wood.
SNAKE WOOD, Surinam	reverse	
KING WOOD, Africa	obverse	
TULIP WOOD, Brazil	reverse	

No. 44 K.

SPECIMENS OF AMBOYNA OR KNOT WOOD.—1851.

No. 45 K.

VARIOUS SMALL COLLECTIONS OF WOODS.

From the Universal Exhibition.—1851.

Section L.

GLASS AND ITS APPLICATION.

No. 1 L.

Crown Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 2 L.

Sheet Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 3 L.

Sheet Glass.—Various Samples.

Do. a. Best quality.

Do. b. Extra white.

Do. c. French made.

Do. d. Belgian made.

Do. e. Tinted.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 4 L.

Sheet Glass.—Fluted.

Ditto, Silvered, for Day-light Reflectors.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 5 L.

Sheet Glass.—Fluted.

Ditto, Samples, various.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 6 L.

Opal Glass.—Samples.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 7 L.

Plate Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 8 L.

Plate Glass.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 9 L.

PLATE GLASS.—(Patent).

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 10 L.

PLATE GLASS.—Samples, British polished.

Ditto, ditto.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 11 L.

PLATE GLASS.—British polished.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 12 L.

PLATE GLASS.—British polished, silvered.

Ditto ditto chequered.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 13 L.

PLATE GLASS.—Rolled, in sizes.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 14 L.

PLATE GLASS.—Rolled, in sizes.

Ditto ditto, Samples.

Ditto ditto, variously tinted.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 15 L.

ROLLED PLATE, QUARRY GLASS.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 16 L.

ROLLED PLATE, QUARRY GLASS.

Ditto ditto, Samples.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 17 L.

PERFORATED GLASS, FOR VENTILATION.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 18 L.

SAMPLES OF TINTED, PLATE, ROLLED PLATE, QUARRY, AND SHEET GLASS.

Manufactured by James Hartley and Co., Wear Glass Works, Sunderland.

No. 19 L.

COLOURED GLASS IN SHEETS,—VARIOUS COLOURS.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 20 L.

SAMPLES, COLOURED GLASS.

Specimens, stained; various colours.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 21 L.

SPECIMENS OF COLOURED GLASS.

Illustrated by one pattern without the use of enamel. Manufactured by Messrs. James Hartley and Co., Wear Glass Works, Sunderland.—1851.

No. 22 L.

ENAMELLED GLASS, SHEET, in sizes.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 23 L.

ENAMELLED GLASS, SHEET, in sizes.

Ditto „ Sample.
Ditto „ Tinted.
Ditto „ ditto.

R. Mettam and Co., 30, Princes Street, Soho, W.

No. 24 L.

ENAMELLED GLASS, SHEET.—Three Sashes, glazed.

Sheet Glass, tinted margin - } Margins
Ditto, cut margin - } of
Ditto, coloured pattern - } Sashes.

R. Mettam and Co., 30, Princes Street, Soho, W.

Ornamental Glass.

No. 25 L.

EMBOSSED BORDERS AND ROSETTES.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 26 L.

EMBOSSED BORDERS AND ROSETTES.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 27 L.

CUT BORDERS AND ROSETTES.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 28 L.

CUT BORDERS AND ROSETTES.

Various colours and designs.

Mark Bowden and Company, Nelson Street, Bristol, and I. White and Co., Glass Works, Nailsea, Bristol.

No. 29 L.

WINDOW PANES OF GROUND GLASS, WITH CUT ORNAMENTS.

Mark Bowden and Company, Nelson Street, Bristol, and I. White and Co., Glass Works, Nailsea, Bristol.

See Advertisement.

No. 30 L.

ORNAMENTAL WINDOW PANES.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 31 L.

SPECIMEN OF ORNAMENTAL WINDOW GLASS.

T. Baillie and Sons, Glass Stainers, 118, Wardour Street, W. C.

NOTE.—This specimen was prepared for, and exhibited at, the Great Exhibition of 1851. The subject is, William Shakespear reading his plays to Queen Elizabeth.

No. 32 L.

ILLUSTRATIONS OF A PATENTED PROCESS FOR ORNAMENTING WINDOW GLASS.

Patentee, F. Joubert, 36, Porchester Terrace, W.; Agents, T. Baillie and Sons, 118, Wardour Street, Oxford Street, W.C.

NOTE.—The process consists in enamelling photographic pictures upon the panes of glass, rendering them perfectly indestructible, and incapable of injury by cleaning or washing.

Ecclesiastical Glass.

No. 33 L.

TINTED, SHEET GLASS, "CATHEDRAL."—Samples.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 34 L.

ORNAMENTAL WINDOW GLASS.—Samples.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 35 L.

ORNAMENTAL WINDOW GLASS.—Samples.

Mark Bowden and Company, Nelson Street, Bristol, and I. White and Co., Glass Works, Nailsea, Bristol.

See Advertisement.

Glass used in Floors, Roofs, &c.

No. 37 L.

GLASS TILES FOR ROOFING; May be used with ordinary Tiles.

TILES, Sheet Glass.
Do. Rolled Plate Glass.
Do. Cast Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 38 L.

GLASS TILES, Pan Tiles, In various descriptions of Glass.
Do. Channelled Tiles, „ „
Do. Plain Tiles, „ „

R. Mettam and Co., 30, Princes Street, Soho.

No. 39 L.

GLASS SLATES FOR ROOFING; of various sizes;
May be used with ordinary Roofing Slates.

SLATES, Sheet Glass.
Do. Rolled Plate Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 40 L.

SLATES, Sheet Glass.
Do. Rolled Plate Glass.

R. Mettam and Co., 30, Princes Street, Soho.

No. 41 L.

AREA LIGHTS, various thicknesses, Rough Cast Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, W.

No. 42 L.

AREA LIGHTS, various thicknesses, Rough Cast Glass.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 43 L.

GLASS RISERS, FOR STEPS.

R. Mettam and Co., 30, Princes Street, Soho, London, W.

No. 44 L.

COAL-HOLE PLATES, Rough Cast Glass.

Cosmopolitan Glass Company. Hely and Co., 296, Oxford Street, London, W.

Various Applications of Glass.

No. 46 L.

DECORATIVE PAINTING ON GLASS.

J. McLachlan, Painter and Decorator, 35, St. James's Street, S.W.

No. 47 L.

1 EMBOSSED AND GILT TABLE TOP.

R. Mettam and Co., 30, Princes Street, Soho.

No. 48 L.

SAMPLES OF LENSES, in various Colours, for Railway Signals.

R. Mettam and Co., 30, Princes Street, Soho.

No. 49 L.

SAMPLES OF LENSES, in various Colours, for Ship Signal Lights.

R. Mettam and Co., 30, Princes Street, Soho.

No. 50 L.

DECK LIGHTS, for Ships' Decks, &c.

R. Mettam and Co., 30, Princes Street, Soho.

No. 51 L.

MISCELLANEOUS ARTICLES IN GLASS.

Section M.

MODELS, AND SPECIMENS OF BUILDING CONTRIVANCES.

No. 1 M.

Sectional Model of the Roof of the Great Northern Railway Station at King's Cross.

Executed and exhibited by Lewis Cubitt, Esq., with accompanying diagrams.

No. 2 M.

Sectional Model of the Roof of the Great Northern Railway Station at King's Cross, as originally proposed.

Exhibited by Lewis Cubitt, Esq., with accompanying diagrams.

No. 3 M.

Model, illustrating the Construction of the Building erected for the Machinery Court of the International Exhibition of 1862.—Scale ½ inch to 1 Foot.

Designed by Captain Francis Fowke, R.E., South Kensington.—1861. Erected by Messrs. Kelk and Lucas, London and Lowestoft.

No. 3a M.

Model, illustrating a Proposal for a Roadway and Footpath on the existing Bridge over the Serpentine in Hyde Park.

Designed by Captain Francis Fowke, R.E., South Kensington.—1860.

No. 4 M.

Model of Church Roof, Scale 1½ Inch to the Foot.—1851.

Dalfor Kerry, County Montgomery. J. Newnham, Architect. See Tracing of Drawing, No. 54 Z.

No. 5 M.

Model of a Design for the Church of St. Martin-in-the-Fields, London.

By James Gibbs, Architect of the present Church, which was completed in 1726, and cost 36,891*l.* 10*s.* 4*d.*

No. 6 M.

Model of a Design for a Church in London.

Name of the Architect unknown.—18th Century.

No. 7 M.

MODEL OF THE CHURCH OF ST. MARY-LE-STRAND, LONDON
James Gibbs, Architect. Completed September 7th, 1717.

No. 8 M.

MODEL OF A DESIGN FOR A CHURCH IN SMITH SQUARE, WESTMINSTER.

—— Archer, Architect.—18th Century.

No. 9 M.

MODEL OF THE CHURCH OF ST. JOHN THE EVANGELIST, IN SMITH SQUARE, WESTMINSTER.

The Model represents the Church nearly as it stands at present. —— Archer, Architect,—Consecrated June 20th, 1728.

No. 10 M.

MODEL OF A ROUND CHURCH PROPOSED TO BE BUILT IN SMITH SQUARE, WESTMINSTER.

—— Archer, Architect.—18th Century.

No. 11 M.

MODEL OF A TOWER FOR A LONDON CHURCH.

Architect unknown.—18th Century.

No. 12 M.

MODEL OF THE CATHEDRAL AT STRASBURG.

Exhibited by Edward Wyttenbach, Submarine Telegraph Company, Threadneedle Street, E.C.

Julius Lemann fecit, Lausanne.—1840–43.

No. 13 M.

MODEL OF GROINED ROOF.

Executed by J. Jopling.

No. 14 M.

MODEL OF ROOF.—INDEPENDENT CHAPEL, HIGHGATE.

Lent by T. Roger Smith, Architect, 57, Strand, W.C.

No. 15 M.

MODEL OF THE SURREY CHAPEL, BLACKFRIARS ROAD.

Executed by W. Goad, Engineer, 45, Union Street, Friar Street, Blackfriars Road, S.

No. 16 M.

MODEL OF THE TOWN HALL, LEEDS.

Executed by G. Elsley, 15, North Street, Fulham Road.

No. 17 M.

MODEL OF JACOBABAD, UPPER INDIA, the Residence of General Jacob.

Lent by Smith, Elder, and Co., 65, Cornhill, E.C.

No. 18 M.

MODEL OF THE OLD LIGHTHOUSE ERECTED IN 1776 ON THE "SMALLS" ROCKS, 17 MILES OFF THE COAST OF PEMBROKESHIRE.

Lent by H. Pickering Clarke, Esq., Trewern House, Spring Grove, Isleworth, S.W.

NOTE.—This lighthouse was replaced in 1861 by a stone edifice. The model is made out of one of the oak pillars of the original structure.

No. 19 M.

MODEL, ILLUSTRATING THE ARRANGEMENT OF A MODERN SCOTCH FARMSTEAD.

Scale, $\frac{1}{4}$ inch to 1 foot.

Presented by J. Black, Esq., C.E., 20, Great George Street, Westminster, S.W.

NOTE.—This model farmstead was erected by W. Stirling, Esq., M.P., at Kier, in Perthshire, from designs by W. Stirling, junior, architect, Dumblane. The buildings occupy about two acres of ground, and work a farm about 1,100 acres in extent.

No. 20 M.

MODEL, ILLUSTRATING A PROPOSAL FOR THE EMBANKMENT OF THE RIVER THAMES, FROM WESTMINSTER TO BLACKFRIARS BRIDGE.

John Fowler, W. Hemens, H. Fulton, Engineers.—1861.

Lent by J. Fowler, Esq., C.E., F.R.S., 2, Queen Square Place, S.W.

No. 21 M.

MODEL, ILLUSTRATING A PROPOSED PLAN FOR IMPROVEMENTS IN MAKING AND LAYING OUT THE STREETS OF LARGE TOWNS.

J. W. Couchman, C.E., Tottenham Green, Inventor.

NOTE.—This proposal was submitted in 1857, to the Metropolitan Commissioners of Works.

No. 22 M.

MODELS OF GLASS DOMES OR LANTERN LIGHTS.

W. R. Swinburne and Co., South Shields and Newcastle-upon-Tyne.—1851.

No. 23 M.

MODEL OF A PATENT WINDOW; a simple invention, for taking out the sashes to clean, &c.

C. Herring, Inventor.—1851.

No. 24 M.

MODEL OF A PAIR OF DOUBLE HUNG SASHES, Sash Lines concealed.

Presented by W. W. Warren, Esq., Milton Villas, Gravesend.

No. 25 M.

MODEL OF PATENT WINDOW.—AN INVENTION FOR REMOVING THE SASHES.

W. H. Elkin, 5, Guildford Street East, Wilmington Square, W.C., and 27, Belvedere Road, Lambeth. *See* Advertisement.

NOTE.—The improvements in these sashes consist in arranging a moveable pulley stile on one side of the window frame, which is always kept tight against the sash frame by springs or other means, applied for the purpose. On raising the sash frame about half of its full opening distance, and then thrusting it against the loose pulley stile, the sash frame may be forced aside sufficiently to allow of its being clear of the window frame, and so removed from it altogether.

No. 26 M.

MODEL OF A PATENT METHOD FOR HANGING WINDOW SASHES.

D. Miles, Builder, Inventor, 36, Ruperra Street, Newport, Monmouth.

NOTE.—These sashes are fitted much in the usual way, and will work up and down simply as double hung sashes. When they require cleaning, by pressing a spring, the sashes are released from the pulley stiles, and will then turn over on centre hinges provided for the purpose, and the outside of the panes of glass can be got at without further trouble. The cost of the fittings does not exceed 6*s.* a pair of sashes.

No. 27 M.

ILLUSTRATIONS OF A PATENTED METHOD FOR HANGING AND REMOVING WINDOW SASHES.

John Gurman, Builder, Inventor, 4, Onslow Road, Newtown, Southampton.

NOTE.—The principal feature in the arrangement of these sashes, which work up and down in the ordinary manner, is the provision of a moveable pocket in the pulley styles, which, when removed, enables the sash to be thrust aside, and drawn out clear of the framing. Patented fittings for the lines, as well as special pullies for balance hung sashes, are also exhibited. The prices of these several fittings vary according the size of the sashes from 9*s.* 6*d.* per set in brass, to 6*s.* 6*d.* per set in iron for weight sashes.

No. 28 M.

ILLUSTRATION OF A PATENTED METHOD FOR HANGING WINDOW SASHES.

Edward Bing, Builder, 21, Effingham Street, Ramsgate.

NOTE.—The sashes will either work up or down in the ordinary way, or by relieving a bolt, which secures them to an independent pulley stile, they may be opened inwards as a casement window.

No. 29 M.

ILLUSTRATION OF A PATENTED BRASS WATER BAR AND SASH FASTENER.

Edward Bing, Builder, 21, Effingham Place, Ramsgate.

No. 30 M.

VENTILATING WINDOWS.—IRON FRAMES.

George Hurwood, Ipswich, Suffolk.

See Sec. J., No. 4.

NOTE.—These ventilating windows can be more or less opened or closed at pleasure, by means of a key which is fitted to work the moveable frames. They are especially suitable for schools, hospitals, churches, &c., and have been used with great success at Ipswich. They are made in various ways, so as to give any required amount of ventilation.

No. 31 M.

MODEL OF A WINDOW SASH, fitted with Wainwright's Patent Ventilating Appliances.

J. Wainwright, 6, Beech Terrace, Harrow Road, N.W.

No. 32 M.

MODELS OF WINDOW SASHES, IN WOOD OR IRON, Illustrating the Application of Cooke's Patent Wire Gauze Ventilators.

The Ventilation and Sanitary Improvement Company.

W. Cooke, C.E., Inventor, 54, Charing Cross, S.W.

No. 34 M.

MODEL OF STONE OR TERRA COTTA MULLIONED WINDOW, fitted with sliding Sashes.—1851.

T. G. Newnham, Architect, Newtown, Montgomeryshire.

See Tracings of Drawings, No. 55 Z.

No. 35 M.

MODEL OF A WINDOW, with six frames to open and shut separately; swinging top-heavy, to ensure their remaining open, and fastened with a spring.

Samuel Hill, Clifton, York, Inventor.—1851.

No. 36 M.

MODEL.—MOORE'S PATENT VENTILATOR.

J. Moore, 81, Fleet Street, London.

No. 37 M.

MOORE'S PATENT VENTILATOR.—Full size.

J. Moore, 81, Fleet Street, London.

See Advertisement.

No. 38 M.

WARNER'S PATENT VENTILATING FRAMES.

J. Warner and Son, 8, Crescent, Jewin Street, E.C.

No. 39 M.

MODEL OF A WINDOW SASH, Illustrating a Patent Fastener.

Wilkinson and Co., Patentees, 7, Jeffreys Square, St. Mary Axe, E.C.

Price, 2*s.* 6*d.* each.

No. 40 M.

MODEL OF A FRENCH CASEMENT WINDOW, fitted with Brown's Patent Cloth-padded wood strips for preventing Draughts, &c.

J. Brown, Architect, Inventor and Patentee, Upper King Street, Norwich. Agent, Thomas Barton, 35, Wellington Street, Strand, W.C.

NOTE.—These cloth-padded wood strips can be easily applied to both old and new work. They are supplied ready for immediate use, at 3½*d.* per foot in pine, and 4*d.* in oak.

They are equally applicable to French or other casements, sash doors, external and internal doors, &c.

It is important, that sashes should be fitted "loosely," so that they may traverse with ease, care being taken in the hanging, that they work upon the inner and outer beads of the sash frames, to prevent any friction of the cloth padding.

For railway and other carriage doors and windows the patent cloth-padded stop will be found invaluable for the prevention of noise, and the exclusion of draught and dust.

Tools for making the grooves for the cloth in carriage windows, where the wood strips cannot practically be applied, and other requisites to the complete working of this patent system, can be obtained of the accredited Agents, or, through them, of the Patentee.

No. 41 M.

MODEL, ILLUSTRATING BROWN'S PATENT WINDOW FITTINGS.

Cloth-padded wood strips for preventing Draughts; and showing a double method of arrangement for securing Ventilation, through wire gauze screens, or blinds.

J. Brown, Architect, Upper King Street, Norwich.

No. 42 M.

MODEL OF A PATENT ROLLER BLIND.

C. Vinall, 26, Walton Street, Brompton, S.W.

No. 43 M.

MODEL, ILLUSTRATING PATENT FITTINGS FOR ROLLER BLINDS.

Feldwick & Co., Inventors and Makers, 14, St. Martin's Court, Leicester Square, W.

NOTE.—The following are the prices :—

1¼ in. brass fitings -	- 30*s.* per dozen.
1⅝ in. „ „ -	- 40*s.* „
1¼ in. iron fittings	- 18*s.* „
8⅝ in. „ „ -	- 22*s.* „

No. 44 M.

MODEL, SHOWING THREE VARIETIES OF CLARK'S PATENT SELF-COILING AND REVOLVING WOOD AND STEEL SHUTTERS.

Clark and Co., 15, Gate Street, Lincoln's Inn Fields, W.C.

See Advertisement.

No. 45 M.

MODEL, AND LOOSE BRICKS, illustrating Warren's System of Fire-proof flooring. See drawings, Sec. z, No. 56.

W. W. Warren, Milton Villas, Gravesend.

No. 46 M.

SPECIMEN, AND LOOSE BRICKS.—Full size.

Illustrating Bunnett's patent, Fire-proof flooring.

Bunnett and Co., Deptford, and 17, Queen Street, City, E.C.

See Advertisement.

NOTE.—This fire-proof flooring is constructed of hollow or cellular bricks made specially for the purpose. They are joggled at their sides, so that when laid, and tied by iron rods, they lock together, and form a perfect key one to the other. This form of flooring has been used in the Grosvenor Hotel, at the London and Brighton Railway Station, Pimlico. It is made in various modifications of strength calculated to sustain a weight of 100 to 300 lbs. and upwards, to the square foot.

No. 47 M.

SPECIMEN OF DENNETT'S PATENT PLASTIC COMPOUND ARCH, for Fire-proof floors for cottages, &c.

C. C. and A. Dennett, Nottingham.

NOTE.—The specimen exhibited is 2½ inches thick in the centre, and 4¾ inches thick at the haunches. It has a span of 5 feet, with a rise of 2¼ inches. A similar specimen when tested, carried a weight of 5 tons without

injury. The cost of the flooring will not exceed 3*d.* per foot superficial, in any part of England where sulphate of lime abounds. The cost of the material at Nottingham, in the specimen, was 1*s.* 3*d.*

When laminated with hoop iron diagonally, the strength of the construction is very materially augmented.

No. 48 M.

MODEL, ILLUSTRATING A METHOD OF TRUSSING WOODEN GIRDERS WITH CAST IRON.

Lent by H. G. Coombes, Esq., C. E., 17, Union Street, Borough, S.E.

No. 49 M.

MODEL, OF STAIRCASE AND CORRIDOR, DORCHESTER HOUSE, PARK LANE.

Executed in marble and alabaster.

Lent by Lewis Vulliamy, Esq., Architect, 1, Duncannon Street, West Strand.

No. 50 M.

MODEL, ILLUSTRATING AN ARRANGEMENT OF A DOUBLE STAIRWAY.

Designed and lent by G. A. Burn, Esq., Architect, 9 B, New Broad Street, E.C.

No. 51 M.

MODEL.—A STEEL DOOR SPRING, to act without noise.

No. 52 M.

MODEL, ILLUSTRATING GREENWOOD'S PATENT INDIA-RUBBER DOOR STOP, for preventing Draughts, &c.

J. Greenwood, Builder, 10, Arthur Street West, London Bridge, E.C.

No. 53 M.

MODEL, ILLUSTRATING THE APPLICATION OF J. BROWN'S PATENT CLOTH-PADDED WOOD STRIPS TO A DOOR, for preventing Draughts, &c.

J. Brown, Architect, Inventor and Patentee, Upper King Street, Norwich. *See* Note, No. 40 M.

No. 54 M.

FULL SIZE ILLUSTRATION OF A REGISTER FOR FIRE GRATES.

E. A. Spurr, Esq., Architect, Inventor. Exhibited by Edwards and Son, Great Marlborough Street, Oxford Street, W.C.

No. 55 M.

MODEL OF A FIREPLACE with ventilating air chamber behind. SLIDING GUARD, for protection against accidents by fire.

Samuel, Hill, Clifton, York, Inventor.—1851.

No. 56 M.

MODELS OF VENTILATING OPEN FIREPLACES.

Jules Norsian, Hampstead House, St. John's Wood.—1851.

No. 57 M.

MODEL OF A SINK FOR KITCHENS, SCULLERIES, &c., FITTED WITH PATENT EFFLUVIA TRAP.

Tye and Andrew, 5, Spencer Place, Brixton Road, S.

Prices: 3-inch Pipe, 4*s.* 6*d.* to 6*s.* each Trap; 4-inch Pipe, 5*s.* 3*d.* to 7*s.* 6*d.* each. *See* Advertisement.

No. 58 M.

MODEL ILLUSTRATING M'KINNELL'S SYSTEM OF VENTILATION, AND TWO VENTILATORS (full size).

J. M'Kinnell, 15, Langham Street, Portland Place, W.

No. 59 M.

SECTIONAL MODEL OF A BUILDING, showing a method of underground smoke drainage.

George Devey, 16, Great Marlborough Street.—1851.

No. 61 M.

MODEL,

Showing a system of glazing greenhouses, conservatories, &c. A. Kent, Chichester.—1851.

NOTE.—The chief points of novelty are—1. That by the peculiar construction of the lights, and the selection made in the materials to be used, putty and all other adhesive composts are entirely avoided. 2. That the glass can be put in or removed with such facility that the bars and frame can be painted, the glass cleaned, and the whole effectually repaired at an immense saving upon the old system. 3. That it will not require such frequent repairs as ordinary greenhouses. 4. That in the event of a fracture it will not be absolutely necessary to wait for the assistance of a glazier to repair the same, the simplicity of the contrivance enabling any one to become his own glazier. 5. That leakage, a universal complaint in the old system, is here guarded against by a peculiar grooved ar. which likewise

assists in carrying off evaporation and renders ventilation more complete. 6. That the glass being moveable, persons can erect greenhouses upon the property of others, and remove the same securely at the expiration of lease or rental terms.

No. 62 M.

MODEL OF FIRE ESCAPE, consisting of a rope ladder wound about a reel contained in the window seat, or in a box fixed inside a window, to be thrown out, and the lower end secured by a bystander.

W. Daniell, Truro, Inventor.—1851.

No. 63 M.

MODEL OF A FIRE ESCAPE DRESSING TABLE, intended to be always ready and in instant motion, without the least preparation, and to be drawn up either from above or from below as many times as there are persons to be rescued. The first motion of raising the table top opens the window and lets down iron blinds to any number of the lower windows.

No. 65 M.

MODEL IN PLASTER OF PARIS.

The Temple of Vesta, Tivoli.

No. 66 M.

MODEL IN PLASTER OF PARIS.

The Erictheium, Athens.

No. 67 M.

MODEL IN PLASTER OF PARIS.

The Propylæa, Athens.

No. 68 M.

MODEL IN PLASTER OF PARIS.

The Lantern of Demosthenes, Athens.

No. 69 M.

MODEL IN PLASTER OF PARIS.

The Temple of Ilissus, Athens.

No. 70 M.

MODEL IN PLASTER OF PARIS.

The Temple of Fortuna Virilis, Rome.

No. 71 M.
MODEL IN PLASTER OF PARIS.
Temple of Segesta, Sicily.

No. 72 M.
MODEL IN PLASTER OF PARIS.
The Portico of Septimus Severus, Rome.

No. 73 M.
MODEL IN PLASTER OF PARIS.
The Temple of Augustus, Rome.

No. 74 M.
MODEL IN PLASTER OF PARIS.
The Temple of Augustus, Pola.

No. 75 M.
MODEL IN PLASTER OF PARIS.
The Temple of Augustus, Nismes.

No. 76 M.
MODEL IN PLASTER OF PARIS.
The Temple of the Winds, Athens.

No. 77 M.
MODEL IN PLASTER OF PARIS.
The Temple of Theseus, Athens.

No. 78 M.
MODEL IN PLASTER OF PARIS.
The Arch of Constantine, Rome.

No. 79 M.
MODEL IN PLASTER OF PARIS.
Tomb at Palmyra.

No. 80 M.
MODEL IN PLASTER OF PARIS, of a Triumphal Arch. Designed by Mr. Nash, to commemorate the Victories of Waterloo and Trafalgar.

No. 82 M.
MODEL OF A CHURCH SPIRE.—GERMAN CONSTRUCTION.
J. Schröder, Polytechnic Institute, Darmstadt.

No. 83 M.

MODEL OF ROOF, THE THEATRE, MUNICH.—GERMAN CONSTRUCTION.

J. Schröder, Polytechnic Institute, Darmstadt.

No. 84 M.

MODEL OF ROOF, THE FRUIT MARKET, MAINTZ.—GERMAN CONSTRUCTION.

J. Schröder, Polytechnic Institute, Darmstadt.

No. 85 M.

MODEL OF ROOF, THE STATE HOUSE, DARMSTADT.—GERMAN CONSTRUCTION.

J. Schröder, Polytechnic Institute, Darmstadt.

No. 86 M.

MODELS OF ROOFS.—GERMAN CONSTRUCTION.

J. Schröder, Polytechnic Institute, Darmstadt.

NOTE.—These models were procured from the Universal Exhibition of 1851, at its close.

No. 87 M.

MODEL OF THE ROOF OF THE PRINCIPAL BUILDING OF THE TEMPLE OF KWANTE, CANTON.

Made by Corporal Mempes and Sappers Parker and W. Thompson, Royal Engineers. Scale, 1 inch to 1 foot.

Contributed by Sir J. F. Burgoyne, Bart., G.C.B., Royal Engineers, Inspector-General of Fortifications, War Office, Pall Mall, S.W.

No. 88 M.

MODEL OF A WOODEN BRIDGE IN CEYLON.

Presented by Captain Edward Barnes, late H.M.'s 27th Regiment, 62, Lincoln's Inn.

NOTE.—This bridge was built by General Fraser, and spans the river Mahavelle-ganga at Peradenia, near Kandy, Ceylon. It is constructed entirely of wood, and is fastened and keyed by wooden keys and wedges only. It was built and put together at Colombo, and was afterwards removed and built in its present position. Its span is about 205 feet.

No. 89 M.

MODEL OF AN ECONOMIC PUBLIC DRINKING FOUNTAIN ERECTED IN THE TOWN OF SHAFTESBURY.

W. Batten, Inventor, Barton Hill House, Shaftesbury.

NOTE.—Several public drinking fountains similar in arrangement to this model, have been erected in Shaftesbury under Mr. Batten's superintendence. A regulating cock at the back of the fountain, in addition to the stop valve in front, is the principal improvement. The embellishments are in terra cotta.

No. 90 M.

ILLUSTRATIONS OF SOME OF THE RESTORATIONS OF THE PALACE OF THE ALHAMBRA AT GRANADA, SPAIN.

Don Rafael Contreras, Director, Calle de Gomeles, No. 8, Granada.

No. 2. The Divan in the Court of Laurel Trees.
„ 3. Gateway to the Court of Lions.
„ 5. The front side of the Tower of Ambassadors.
„ 10. Niche for depositing sandals, in the Hall of Comares.

Agents for these Illustrations, Messrs. La Bastida and Co., 43, Hart Street, Bloomsbury, W.C.

Miscellaneous Articles.

No. 91 M.

TWO PATENT RIDGE TRESTLES (full size), used on roofs, for repairing chimney stacks, &c.

W. Wilkins, Builder, Inventor, 40, Broad Street, Banbury. *See* Advertisement.

No. 92 M.

MODEL OF A PATENT HOIST, for raising Building Materials of every description, and for other purposes.

A Latch and Catch, full size.

Also an illustration of his Patent "Waved Wheel."

George Johnson, Builder and Inventor, East Street, Wandsworth. *See* Advertisement.

No. 93 M.

TWO SETS OF WESTON'S PATENT DIFFERENTIAL PULLEY BLOCKS.

One set, to lift 1 ton, complete for a 10 ft. lift; 3*l.* 10*s.*

One set, to lift 2 tons, complete for a 10 ft. lift; 5*l.*

Amies and Barford, Makers, Queen Street Iron Works, Peterborough.

NOTE.—These pulley blocks are made in various sizes, and are capable of raising a weight of 2 cwt.; up to 4 tons. The requisite chain for the pullies is sold at 4*d.* to 1*s.* 3*d.* per foot, according to the weight which it will be required to sustain; and the blocks at from 3*l.* 3*s.* to 5*l.* per set.

No. 94 M.

MODEL OF TRAVELLING SCAFFOLD, CRANE, OR GYN. By Messrs. Nepveu, Engineers, Paris.—1855.

Model of a sort of travelling scaffold by Messrs. Nepveu, the contractors for works in the Paris Exhibition, but which was more for the purpose of a crane or gyn than a scaffold; it consisted of a cross beam supported by four legs, two at each end, diverging outwards, and having a wheel about 2 feet 5 inches in diameter at the foot of each leg moveable like a castor, and on which it travelled; it was a good deal employed in raising some of the heavy French machinery, and seemed to answer its purpose well; it was remarkable for the lightness of scantling of the pieces of which it was composed, a principle which seems to characterize Mr. Nepveu's works in carpentry.

No. 95 M.

PUMP AND TANK (patented), for emptying excavations, foundations of buildings, &c.

W. T. Dalton and Son, Makers, Ratcliffe Cross, E.C.

No. 96 M.

LENGTH OF TUBING (patented), for the conveyance of water, &c.

W. T. Dalton and Son, Makers, Ratcliffe Cross, E.C.

No. 97 M.

ILLUSTRATIONS OF KERSHAW AND BELLAMY'S PATENT PROCESS, for graining and imitation.

Kershaw and Bellamy, Decorators, &c., 33, High Street, Marylebone. *See* Advertisement.

No. 98 M.

PANELS, ILLUSTRATING WOOD DECORATION BY MEANS OF DIFFERENT COLOURED STAINS.

J. G. Howe, Patentee, 8, Emeis Terrace, Grafton Street, Kentish Town.

NOTE.—The woods thus stained and decorated are chiefly deal, sycamore, and walnut.

No. 99 M.

A PANEL AND SEAT OF STAINED AND VARNISHED DEAL, For Church, School, and other similar Work.

Mander, Brothers, Varnish and Japan Manufacturers, Wolverhampton.

Agent, T. Kershaw, 38, Baker Street, W.

NOTE.—The panel and seat are simply shown to exhibit the varnish upon them, which is pure and tackless.

No. 100 M.

A CABINET IN COMMON DEAL, STAINED AND VARNISHED.—Illustrating different coloured stains for wood decoration.

H. Stevens, Patentee, 18, St. Martin's-le-Grand, E.C.

NOTE.—These stains are manufactured either as a liquid or as a dry powder. The liquid colours are sold in bottles at 6*d.* and 1*s.* each, and at 8*s.* per gallon. The dye powders are 8*s.* per lb., which will make a gallon of liquid stain of the deepest tint, and will cover 100 square yards. For lighter shades the liquid may be diluted with clear water.

Varnish and size especially prepared for use with these stains may also be obtained, the former at 12*s.* per gallon, and the latter at 1*s.* per lb.

No. 101 M.

ILLUSTRATIONS OF A PATENT MATERIAL FOR VENEERS—French Manufacture.

A Pair of Folding Doors, and Two Panels.

E. Gilles and Co., Agents, 15, Fenchurch Street, E.C.

NOTE.—These Patent Veneers are manufactured in imitation of different marbles, and are adapted for round or flat surfaces, mouldings, &c. The price varies from 1*s.* 6*d.* to 2*s.* 6*d.* per foot superficial, according to the colour of the imitations.

No. 102 M.

SPECIMENS OF BIELEFELD'S PATENT FIBROUS SLABS, for Wall Lining, &c.

The Patent Fibrous Slab Company, Hale Mills, Staines, and 13, Gresham Street, E.C. I. Croome, Manager.

NOTE.—The Patent Fibrous Slabs are applicable for wall lining, panelling, &c., for coach work, and the interior fittings of ships.

They have been used for the ceiling of the reading-room of the British Museum, and of Covent Garden Theatre. The slabs are manufactured in lengths of 14 feet, by 6 feet in width, and from ¼ to 2 inches in thickness.

They can be bent to any required form, and also surfaced ready for painting, varnishing, &c. The prices vary, according to the thickness of the slabs, from 2*d.* to 1*s.* per foot superficial for rough slabs, and, if surfaced, 1*d.* per foot extra per side is charged.

No. 103 M.

SPECIMENS OF BIELEFELD'S PATENT FIBROUS SLAB, as applied for Light Roofs, &c.

The Patent Fibrous Slab Company, Hale Mills, Staines, and 13, Gresham Street, E.C.

No. 104 M.

MODEL, STONE WINDOW MULLION.—Illustrating a method of fitting sliding sashes.

No. 104a M.

ILLUSTRATION OF THE IONIC ORDER OF ARCHITECTURE.

Presented by Dr. Hahn, Consul for Austria, Syra.

NOTE.—The ornament of this capital is composed of parts of the shell Dolium galea, a specimen of which is exhibited, and is made according to the proportions which are met with in the columns of the Nike Temple on the Acropolis.

The illustration is intended to show that probably this shell, which is to be found in great numbers in Greek waters, may have been used as a motive for the characteristic elements of the Ionic order of Grecian architecture.

No. 105 M.

A WOODEN PUMP, FROM JAPAN.

Presented by H. H. Howell, 52, Mark Lane, E.C.

These pumps are used by the Japanese as fire engines. They are made out of one piece of soft wood, bored through its centre, in which works a common rag plunger on the end of a stick. There is a moveable spout attached to it by a curious iron clip. The whole is strengthened by thin copper bands fastened with copper nails.

No. 106 M.

A SET OF COMMON BELLOWS, USED BY THE CHINESE.—From Tien-tsin.

Presented by Capt. Laurence Archer.

NOTE.—These bellows are made simply of an air-tight box, with a wooden plunger working in it. It is fitted with a wooden clack valve for directing the current of air to the nozzle of the bellows; and the air valves are simple holes closed by coarse paper.

No. 107 M.

ILLUSTRATIONS OF A. MACNAIR AND CO.'S ELECTRIC TELEGRAPH CONDUCTORS.—1851.

Archibald Macnair and Co., Glasgow.

Section N.

PAPER, PAPER HANGINGS, PAPIER MACHE AND CARTON PIERRE.

No. 1 N.

Paper Hangings, Various.

Turner and Co., Manufacturers, Elizabeth Street, Pimlico, S.W.

No. 2 N.

Paper Hangings, Various.

Williams, Coopers, and Co., Manufacturers, 85, West Smithfield, E.C. *See* Advertisement.

No. 3 N.

Paper Hangings, Various Gothic Designs.

Harland and Fisher, Decorators, 33, Southampton Street, Strand, W.C.

No. 4 N.

Paper Hangings, Various.

Scott, Cuthbertson, and Co., Manufacturers, Whitelands, Chelsea.

No. 5 N.

Paper Hangings, in Relievo.

For dining rooms, &c.

Scott, Cuthbertson, and Co., Manufacturers, Whitelands, Chelsea.

No. 6 N.

Paper Hangings, Various.

Jeffreys and Co., Manufacturers, Whitechapel, and 500, Oxford Street, W.C. *See* Advertisement.

Papier Maché and Carton Pierre.

No. 7 N.

Two Panels, Various Ornamental Mouldings, Papier Maché.

George Jackson and Sons, 49, Rathbone Place, Oxford Street, W.

No. 8 N.

VARIOUS SPECIMENS OF ORNAMENTAL WORK, &c., PAPIER MACHÉ.

Haselden and Co.—1851.

No. 9 N.

ONE PANEL, VARIOUS MOULDINGS—COMPOSITION.

George Jackson and Sons, 49, Rathbone Place, W.

No. 10 N.

PANEL, CARTON PIERRE, DECORATION.

No. 11 N.

COVED CORNICE, CARTON PIERRE.

The Army and Navy Club, Pall Mall.

No. 12 N.

COVED CORNICE, CARTON PIERRE.

No. 13 N.

CANDELABRUM, CARTON PIERRE.

No. 14 N.

TROPHY, CARTON PIERRE.

No. 15 N.

TRUSS, CARTON PIERRE.

George Jackson and Sons, 49, Rathbone Place, Oxford Street, W.

No. 16 N.

MOULDINGS, &c., IN PAPER—GERMAN WORK.—1851.

J. J. Selencka, in Braunschweig, Stobenstrasse, 2312.

NOTE.—Papier mâché, as used for architectural works in England, differs in some respect from the ordinary material known by that name. It is prepared by laying sheets of brown paper one over the other, a coat of glue being given between each. These sheets of paper thus glued together are then pressed into a metal mould of the ornament required; the paper thus stamped to shape is afterwards trimmed; a composition of the pulp of paper mixed with resin and glue is now put in the mould before used; the papier mâché ornament previously stamped is again inserted, and is again pressed upon the pulp composition, which thus adheres to it and produces a sharp, well-defined ornament.

Section Z.

ARCHITECTURAL PLATES AND MISCELLANEOUS DRAWINGS.

No. 1 z.

Holland Chapel, Brixton.

Vernon Arnold, Architect.

Pulpit, Desk, and Chancel Seats.

No. 2 z.

Bridge Terrace, Richmond.

H. Laxton, Architect.

1. Campanile.
2. Cornices, Campanile.
3. Entrance Door to Campanile.
4. Elevation, sections, and plans of Campanile.
5. Eaves Roof, containing rooms, to form Attic Story.

No. 3 z.

Walton House, Surrey.

The late Sir Charles Barry, Architect.

1. Plans, elevations, sections, and details of the Lodge.
2. Balustrade and Retaining Wall, between upper and lower gardens.
3. Details of Roof.
4. Bell Turret.
5. Window.
6. Window.
7. Miscellaneous Examples of Masonry, Plasterers' Work, &c.

No. 4 z.

Roof of Westleigh Church, Lancashire.

W. Young, Architect.

No. 5 z.

Farringdon Hall, London.

T. Finden and T. Hayter Lewis, Architects.

1. Roof.
2. Internal Finishings.

No. 6 z.

PANELLINGS AND SKIRTINGS.

The late Philip W. Wyatt, Architect.

No. 7 z.

HIGH CHIMNIES OF VARIOUS MANUFACTORIES, &c.

No. 8 z.

VILLA AT TUNBRIDGE WELLS, Seat of E. Reeves, Esq.

John Billing, Architect.

1. Half of South Front, and details of Blocks and Balusters of Bay Window.
2. Interior elevation, section, and details of Bay Window.
3. Details of Chamber Windows.
4. Details of Porch.
5. External and Internal Cornices.
6. Porch.
7. Boundary Wall and Dormer.
8. Principal Stairs.

No. 9 z.

BAY WINDOW, Furze Hill Lodge, Surrey.

W. Young, Architect.

No. 10 z.

1. ROOF OF WHITEHALL CHAPEL.

Inigo Jones, Architect.

2. ROOF OF EXETER HALL.

G. Dearing, Architect.

No. 11 z.

LAMBETH BATHS, &c.

Ashpitel and Whichcord, Architects.

Roof over First-class Swimming Bath, on Ashpitel and Whichcord's Cross-trussed Lattice-roofed Principle.

No. 12 z.

PRINCIPAL DOORWAY TO ASSEMBLY ROOM; ASHTON TOWN HALL.

William Young, Architect.

No. 13 z.

THE CEDARS, SURREY.

George Morgan, Architect.

1. External Window Dressings.
2. Bow Window.
3. French Casement Window, with Balcony.
4. Hall and Conservatory.
5. Cornice and Attic.
6. Hall and Conservatory.

No. 14 z.

ROOF OF FLETCHER'S CHAPEL, FINSBURY.

William Brooks, Architect.

No. 15 z.

ANCIENT CEILING, FLEET STREET, LONDON.

No. 16 z.

ANCIENT PLASTER CEILING in the house over the Crown and Rolls Rooms, Chancery Lane, London.

No. 17 z.

No. 1, CHANCERY LANE, Corner of Fleet Street.

James Thomas Knowles, Architect.

1. Elevations and sections of the Ground Story.
2. Elevation, section, and details of Second Floor Windows.
3. Details of elevation of the Ground Story.

No. 18 z.

ERECTED AT ROTHERHITHE FOR MESSRS. BRANDRAM.

J. Gwilt, Architect.

1. Roofs, Gates, &c.

No. 19 z.

MUNT AND BROWN'S WAREHOUSE, Wood Street, Cheapside.

G. Somers Clarke, Architect.

1. Joiners' and Plasterers' details, Entrance Loggia.
2. Entrance Door to Loggia.
3. Entrance Porch.
4. Glazed Partitions, First Floor.
5. Elevation and sections of Great Cornice.

No. 20 z.

REGENT'S PARK CHAPEL.

John Thomas, Architect.

1. Screen Wall facing Entrance.
2. Middle Screen Wall and Staircase.
3. Details of Screen Wall.
4. Main Truss of Roof, and Boxed Girder to carry them.

No. 21 z.

SKYLIGHT OVER PRINCIPAL STAIRCASE, No. 3, Albert Gateway.

Executed by the late Thomas Cubitt.

No. 22 z.

PRESTON HALL, MAIDSTONE.—The Seat of E. L. Betts, Esq.

John Thomas, Architect.

1. Plan of Great Hall, and Lantern Light over.
2. Details of Lantern and Skylight.
3. Details of Great Hall and Staircase.
4. Section of Great Hall and Staircase.

No. 23 z.

SHEDDING AT THE LIVERPOOL DOCKS.

J. Hartely, C. E.

No. 24 z.

ROYAL INSURANCE OFFICE, Lombard Street.

J. Belcher, Architect.

1. Ground Floor Window.
2. One and Two Pair Stories.
3. Three and Four Pair Stories.
4. General details.

No. 25 z.

TOWN HALL, BURSLEM.

G. T. Robinson, Architect.

Doorway from Staircase to Portico, and Ground Floor Window.

No. 26 z.

ROYAL SURREY GARDENS MUSIC HALL.

Horace Jones, Architect.

1. Construction of Roof.
2. Details of Third Tier Gallery, and Lantern Mouldings.

No. 27 z.

PORTICO OF VILLA at Surbiton Hill, Surrey.
S. B. Wilson, Architect.

No. 28 z.

UNITY BUILDINGS, Cannon Street.
J. Belcher, Architect.

1. One Pair Story.
2. Two Pair Story.
3. Details of Ground, and One Pair, Story.
4. Entrance Door, and Ground Floor Window.

No. 29 z.

SECTIONS OF THE NEW CHURCH OF ST. THOMAS, Charlton, Kent.
J. and J. S. Gwilt, Architects.

No. 30 z.

WYNYARD HALL, DURHAM.
The late Philip W. Wyatt, Architect.

1. Staircase.
2. Details of Stairs.
3. Masonry Windows in Ground Floor.
4. Fire-proof Floors.

No. 31 z.

CORNISHED PRIORY, Ulverstone.
The late P. W. Wyatt, Architect.

1. Trussed Girders.

LORD MONTAGUE'S MANSION, Ditton Park.
The late W. Atkinson, Architect.

2. Trussed Girder and Floor.

No. 32 z.

LONDON AND PROVINCIAL LAW ASSURANCE SOCIETY, No. 21, Fleet Street, E.C.
John Shaw, Architect.

1. Elevation of One Pair Story.
2. Two Pair Story.
3. Three Pair Story.

4. Details of Three Pair Story.
5. Ground Story.
6. Details of Ground Story.
7. Iron Window Frame, and Bunnett's Iron Shutters.
8. Details of Iron Shutters to Ground Story.
9. Sectional view of various details.

No. 33 z.

No. 28, Hanway Street, Oxford Street.
G. H. Cooke, Architect.
1. Shop Front.
2. Details of Shop Front.

No. 34 z.

St. Giles's Church, Camberwell.
Scott and Moffat, Architects.

No. 35 z.

Internal Plaster Cornices of various Buildings.
W. Young, Architect.

No. 36 z.

Casement Windows.
Messrs. Cubitt and Co.

No. 37 z.

Messrs. Smith's Premises, Corner of Arundel Street, Strand.
H. R. Abraham, Architect.
Windows and Chimney Shaft.
Main Cornice, Balustrade, and Chimney Shaft.

No. 38 z.

Messrs. Paine, Evenden, and Lewis's Shop, Maidstone.
J. Whichcord, F.S.A., Architect.
1. Elevation, plans, and other details.
2. Details of Iron and other Work to Shop Front.
3. Details of Ornamental Iron Work to Shop Front.
4. Sun-light, Gas-light, and Ventilation.

No. 39 z.

CHAPEL, HOOTON HALL, CHESHIRE.

J. K. Colling, Architect.

1. New Windows of Chapel.
2. New Ceiling and Side of Chapel.
3. Details of Window and Ceiling.

No. 40 z.

UNION BANK OF LONDON, Fleet Street Branch.

G. Aitchison, Architect.

1. Details of Glazed Iron Screen.
2. Details of Glazed Iron Screen.
3. Elevation and plan of Iron Screen.

No. 41 z.

MUSEUM OF ECONOMIC GEOLOGY, Jermyn Street.

James Pennethorne, Architect.

1. Details of Lantern Light, &c. over Laboratory.
2. Suspending Bolts, Coupled Girders, &c., to Gallery.
3. Details of Cast-Iron Column in Theatre.

No. 42 z.

NELSON COLUMN, Trafalgar Square.

Timber Scaffolding, used in the erection.

No. 43 z.

PRINCIPAL ENTRANCE, REFORM CLUB HOUSE.

The late Sir Charles Barry, Architect.

Details of Outer and Inner Doors.

No. 44 z.

HOUSE OF J. B. BROOKE, ESQ., AT COWBRIDGE.

John Shaw, Architect.

Casement Window and Shutters.

No. 45 z.

ENGLISH, SCOTTISH, AND AUSTRALIAN CHARTERED BANK, 73, Cornhill.

H. Baker, Architect.

1. Details of One Pair Story Window, South Front.
2. Details of One Pair Story Window.
3. Details of Two Pair Windows.

4. South Elevation and details.
5. Details of Two Pair Story.
6. Details of Ground and Two Pair Stories.

No. 46 z.

KELHAM HALL, the Seat of G. H. Manners Sutton, Esq.
G. G. Scott, R.A., Architect; S. E. Rosser, Engineer.

1. Plan, sections, and detail.
2. Details of Brackets to receive ends of Rafters.
3. Details of Straining Rib and Framing of Lantern Light.
4. Plan and section of Roof.
5. Conservatory.

No. 47 z.

ART TREASURES EXHIBITION, MANCHESTER.
E. Salomons, Architect; W. Dredge, C.E.

1. Central and Grand Entrance.
2. Details of Central Arch, Grand Entrance.
3. Details of Ornamental Girder, Bracket, and Fan-light.
4. Iron Roofs of Great Hall and Side Aisles.

No. 48 z.

ROOF OF COVENT GARDEN THEATRE.
Sir Robert Smirke, Architect.

No. 49 z.

LAW UNION INSURANCE OFFICE, CHANCERY LANE.
J. W. Penfold, Architect.

1. Details of Ground Floor.
2. Details of One Bay, Ground Floor.

No. 50 z.

RUSTICATED QUOINS TO VARIOUS BUILDINGS.
VERMICULATED QUOINS.

A.

CEMENT.

Office of the Equitable Gas-light Company, John Street, Adelphi.

B.

ANCIENT EXAMPLE IN PORTLAND STONE.
33, Chester Street, Belgrave Square.

C.

In Portland Stone.

Central Electric Telegraph Company's Office, Lothbury
H. H. Hunt, Architect.

D.

In Portland Stone.

New Earl Street, City.

E.

In Portland Cement.

Unity Buildings, Cannon Street, City.

F.

In Portland Stone.

Entrance to Messrs. Smith and Son's Warehouse, Arundel Street, Strand.

G.

In Portland Stone.

Entrance to Greenwich Hospital.

Miscellaneous Drawings.

No. 51 z.

Sectional Drawing of the Roof of the Parliament House at Edinburgh.

Presented by R. Matheson, Esq., H. M. Office of Works, Edinburgh.

No. 52 z.

Drawings of the Passenger Station and Goods Depôt, Great Northern Railway Station, King's Cross.

See also Models, Nos. 1 m, 2 m.

No. 53 z.

Drawing of a Temporary Church, erected in Tufnell Park, Holloway.

Lent by G. Truefit, Esq., Architect, 5, Bloomsbury Square. W.C.

No. 54 z.

Sectional Drawings of Church Roofs.

T. G. Newnham, Architect, Newtown, Montgomeryshire, Wales.

No. 55 z.

Drawings, showing a system of fitting Sliding Sashes to Windows with Terra Cotta or Stone Mullions.

See Model, No. 13 m.

T. G. Newnham, Architect, Newtown, Montgomeryshire, Wales.

No. 56 z.

Sectional Drawing of Warren's System for Fire-proof Floors.

W. W. Warren, Esq., Milton Villas, Gravesend.

See Models, No. 18 m.

No. 57 z.

Drawings of Bunnett and Co.'s Fire-proof Floors.

See full-sized Example, Sec. m., No. 19.

No. 58 z.

Plan and Elevation of a Pair of Labourers' Cottages.

J. Holmes, Builder, East Ham, Essex.—1851.

No. 59 z.

Drawing of Boyd's (Patent) System of arranging a Ventilating Shaft in Chimnies, and of admitting "External Air" to Rooms.

D. O. Boyd, 9, Conduit Street, Regent Street, London, W.

No. 60 z.

Miscellaneous Engravings, &c. of Building Appliances and Contrivances for Buildings, &c.

No. 61 z.

A Photograph of an Iron Bridge in course of Erection over the River Jumna, near Delhi, Central India.

A. M. Rendel, Esq., C.E., Engineer.

Presented by Messrs. Omerod, Grierson, and Co., Manchester, the Builders.

Note.—The bridge carries both a railway and an ordinary roadway. The former, the line of the East Indian Railway, is on the top of the girders; and the latter on the bottom of them. It is half a mile in length, and in 12 spans, each 216 feet. The photograph represents the first span of the bridge, which has been tested with a load of 432 tons.

No. 62 z.

DRAWING OF PIMLOTT AND OATES' BRICK-MAKING MACHINE

No. 63 z.

TWO ARCHITECTURAL DRAWINGS, TO ILLUSTRATE THE PERSPECTIVE OF NATURE, AS SEEN BY THE EYE.

No. 64 z.

DRAWING OF A LIGHTHOUSE.

Designed and lent by J. S. Norris, 38, Upper Thames Street, E.C.

APPENDIX.

Extract from Part I. of the Reports on the Paris Exhibition.

Results of a Series of Experiments on the Strength and Resistance of various Colonial Woods, conducted at Paris by Capt. F. Fowke, R.E.

The various collections of specimens of their woods, contributed by different countries to the Paris Exhibition, naturally come under the general head of Forestry, and, as such, belong to the Second Class of the system of classification adopted by the Imperial Commission, and have, doubtless, been dealt with generally by the jury of that class; but when considered in reference to their particular qualification for special purposes, some of these descriptions of timber also enter into the classes which treat of those branches of Art or manufacture, and it is in this way, that in their character of woods of construction, they are found enumerated in the first section of Classes XIII. and XIV., in which classes they are not, however, considered in reference either to their culture, botany, or general properties, but particularly as regards those qualities by which they are rendered suitable for the purposes of the arts treated of in those classes, viz., naval and military art and civil construction; and their value in this respect being mainly affected by such material qualities as their strength, toughness, weight, and elasticity, the present seems not an improper place for introducing the results of a series of experiments on these points made during the Exhibition upon some of the specimens of woods then for the first time brought in competition with each other, and with the ordinary woods already employed by the shipbuilder and carpenter.

Of woods adapted for shipbuilding and construction generally, the principal collections in the Exhibition were contributed by India, Canada, Australia, British Guiana, Jamaica, Van Diemen's Land, &c. Specimens of woods for various purposes were exhibited by many foreign States, viz., France, Algeria, Austria, the Dutch Colonies, &c., but those from the British Colonies above mentioned come more directly under the head of Woods of Construction, and in the contributions sent to the Exhibition by these countries, the prominent place is given in each case to their valuable collection of specimens of native woods. Of these, many, as in the case of the Canadian and some of the Indian timbers, are well known and commonly used in this country, but on examining the Colonial catalogues long lists are found filled with the names and descriptions of various kinds of woods used and valued in the colonies to which they belong, but in most cases unknown in England, and of the merits of which, as compared with the known timbers of commerce, the colonists themselves are totally ignorant.

The present appearing a favourable opportunity for instituting a comparison between some of those woods and those better known in Europe, it was resolved to submit such of the specimens as could be obtained to a series of experiments, with a view to testing, as fully as possible, their qualities of strength, weight, toughness, elasticity, &c. Unfortunately,

the specimens sent were generally of such small dimensions as to be totally useless for any practical test of strength, and many of them were exhibited as specimens of some individual peculiarity of growth or accident, rather than as average representations of the class of timber to which they belong. In the case of three colonies, viz., Australia, British Guiana, and Jamaica, there was, however, sufficient data for obtaining some knowledge as to the comparative value, &c. of a number of different descriptions of timber, some being largely used in the localities in which they are produced, and considered by the colonists to be superior, in many cases, to the woods commonly employed for similar purposes in England.

A very accurate and delicate hydraulic machine for testing the strength of materials having been placed at my disposal by Mr. Dunn, of Manchester, I commenced a series of experiments on such specimens as could be obtained from the Colonial Commissioners, which were carried on in the part of the Exhibition building devoted to machinery, during the months of July, August, and September, and of which the history and results are here given.

The testing machine consisted of a hydraulic press with the piston-rod furnished with a cross-head, working horizontally in cast-iron guides, and having a connecting rod attached to it reaching to the end of the guides; a small valve in the cylinder, furnished with a steelyard and moveable weight, gave the means of ascertaining to a great nicety the exact amount of pressure applied.

As it was desirable, for obtaining the best comparative results, that the woods should all be tested as nearly as possible under similar circumstances, a standard dimension was sought which should be the greatest common to all the specimens, and it was found that a scantling of two inches square, with a length of from 14 to 16 inches, was the greatest that could be obtained to fulfil this condition; a few examples would not quite come up to this scantling, and one or two would not quite give the required length, but on the whole it was thought better to reduce the results obtained from these by calculation, than to cut down the size of all the pieces operated on for the sake of the few. The Australian specimens were generally from 4 feet 6 inches to 5 feet in length, and about two inches square, and these were first experimented on at these dimensions, and afterwards reduced to the fixed standard.

The mode of proceeding was as follows—the specimens were first reduced to the standard dimension, squared and planed perfectly true, labelled with a number, and entered in a catalogue.

Each piece was then carefully weighed and its specific gravity calculated.

The first experiment made was to ascertain the breaking weight, the specimen being supported at the ends, and the strain being applied at right angles to its length, midway between the points of support.

The bearing chosen as the standard was 1 foot, that being the greatest that was common to all the specimens, and two flat iron bars were accordingly fixed to the extremities of the guides of the machine at that distance apart, to serve as the points of support, a piece of iron, having an opening in it of 3 inches square, was shackled on to the end of the connecting rod of the machine through which the piece of wood was passed; the two ends were then brought to bear equally on the points of support, and the square ring above mentioned adjusted to the centre; a piece of strong leather was interposed between the ring and the wood to prevent any abrasion of the fibre, which was likely otherwise to take place under heavy strains; the weight of the connecting rod and ring was then carefully counterpoised so as to avoid any disturbance of the strain from its true horizontal direction, and a slip of paper was fastened

by beeswax to the upper part of the specimen at its centre, on which to note the deflection.

The weight on the steelyard having been placed at zero, the pump was slowly worked until the steelyard showed the first symtoms of motion; a straight edge was then applied to the two fulcra or points of support, and a line ruled across a slip of paper attached to the specimen and marked 0. Experience showed that in general no very perceptible deflection took place until the strain had reached 500 kilogrammes (1,102 lbs. English), and to follow out the principle of treating all the woods alike, the plan adopted therefore was to mark the deflection at each successive 500 kilogrammes of strain until it reached 3,000 (6,612 lbs.). As it was found that the increase of deflection became more rapid as the point of fracture was approached, the deflection was noted at intervals of 250 kilogrammes (551 lbs.), instead of 500 kilogrammes, when the strain exceeded 3,000 kilogrammes.

The exact point of fracture was easily discernable, as the steelyard of the machine, which had been gradually rising under the pressure, instantly fell, and could not be raised by any subsequent action of the pumps.

This experiment was repeated with as many examples of each kind of wood as could be obtained and the mean noted, throwing out such experiments as were evidently unsatisfactory from being performed on a faulty specimen, or from any other cause.

In order to ascertain the power of the woods to bear a crushing strain, a number of small pieces, each measuring exactly an inch cube, were cut from the specimens and squared and planed true, a square bar of steel was introduced into the ring of the machine, having its ends bearing on the supports above mentioned, and the cubic inch specimens were each submitted to a crushing strain between the ring and the steel bar; this strain was applied both in the direction of the grain and also in a transverse direction, forming two distinct series of experiments.

In applying the strain in a longitudinal direction, the specimen having been placed in position, a slip of paper was fastened to the top of the ring, and the steelyard having been brought to zero, and noted as before, the amount which each specimen yielded to the crushing strain was marked on the paper at each 500 kilogrammes (1,102 lbs.), in the same manner as has been already explained in the case of the deflection, until it finally gave way, the point of failure being well marked, as in the former experiment.

When the specimens were submitted to a transverse crushing strain, the failure, instead of being marked and sudden, as in the former cases, took place by degrees, the fibre gradually yielding from the first moment of the strain being applied, but no actual fracture taking place; the method of proceeding was therefore changed, and all the specimens having been submitted to the same strain, the amount of compression which each experienced was carefully marked and measured as before.

As before mentioned, the specimens of wood from Australia were experimented upon separately, as in the first experiment, but with a bearing of four feet instead of one.

In recording the results of these experiments, a separate table is first devoted to each description of wood, in which is given a detailed account of the various tests to which it has been submitted, remarking on any peculiarity either in the specimen or in its mode of fracture or conduct under pressure, and adding such particulars as could be had concerning each. The order followed is the same throughout, viz., first, the name of the colony in which the wood is produced, then the various denominations under which it is known, whether botanical, aboriginal, or colonial; a short description follows, containing such information as could be obtained concerning the description of tree producing the timber, its

abundance or scarcity in the colony, its proximity to the coast or to navigable rivers, the purposes to which the timber is applied in the colony, and the estimation in which it is held there for strength, durability under various circumstances, or any other valuable quality that it may possess; where its cost in the colony, per foot cube, could be ascertained, it is given, and the diameter and height of the tree is added, as affording an index of the size of timber possible to be obtained. Then follows the history of the experiments in the order described above.

At the end, a resumé of the whole is given in a series of four tables, in which the woods are placed in the order of their value in that particular experiment to which the table refers.

Table No. 1. Specific gravity.
„ No. 2. Transverse breaking weight.
„ No. 3. Crushing strain in the direction of the fibre.
No. 4. Transverse crushing strain.

In Table No. 2, the value of *s* is also given for each wood.

As for most purposes a timber acquires additional value from combining the properties of strength and lightness, a fifth table is added, in which the woods experimented upon are ranged in the order in which they stand as to the ratio of their strength to their specific gravity.

The steelyard of the testing machine having been graduated for French weights, the results of the experiments were noted in kilogrammes, and afterwards reduced into English pounds avoirdupois and decimal parts, and the deflections were marked in inches and decimals of an inch. This will account for the apparently irregular intervals at which the amounts of deflection and yielding were noticed.

FRANCIS FOWKE,
Captain Royal Engineers.

Note.—In conducting and registering these experiments, I was assisted by Corporal James Mack of the Royal Sappers and Miners, who displayed the greatest zeal, intelligence, and ability throughout.

In the catalogue of Australian products contributed to the Paris Exhibition, the following appears as an introduction to the list of woods indigenous to New South Wales. It is from the pen of W. McArthur, Esq., Chief Commissioner from that colony to the Exhibition, and the collector and exhibitor of the specimens of wood from which those experimented upon were taken; and as the information which it affords gives additional value to any experiments on the woods of that colony, it is here given intact.

CATALOGUE of SPECIMENS of WOODS indigenous to the SOUTHERN DISTRICTS, collected by Mr. W. MCARTHUR, and exhibited by the Commissioners: with remarks descriptive of the nature of the Trees, and the qualities of their Wood, so far as these could be ascertained.

A short description of the general features of the kind of woodland from which have been collected the majority of the specimens of woods herein-after described in detail, with a few observations upon the general character of the latter, would seem to be a desirable introduction to the catalogue. They will be useful in rendering the subject more intelligible to all who have not had the opportunity of informing themselves by personal observation. For greater convenience, the different descriptions of natural woodlands will be included under three classes; and the letter denoting its class will be inserted opposite to each specimen of wood.

Class A.—Forest more or less open; generally composed of trees with little or no underwood; their trunks more or less naked and lofty, height being a more conspicuous feature than diameter; their heads small in proportion to the trunks, divided into few secondary or tertiary ramifications, and thinly clothed with persistent, dry, dull-coloured, thick, leathery leaves, abounding in essential oils, and in their decomposition adding little to the vegetable matter in the soil. The different species of *Eucalyptus* and *Angophora*, with *Melaleuca*, *Callistemon*, *Syncarpia*, and *Lophostemon*, compose the larger trees which furnish all the common durable hard wood timber used in Sydney and the adjoining districts. Occasionally these dry forests pass into tracts crowded with trees, generally of a single species (still with little or no underwood), their trunks being drawn up to a great height, and of small diameter. The trees of this class are usually produced to a greater size, and with better quality of timber, on lands rather poor than good; the more fertile lands commonly producing trees of comparatively small dimensions, thinly scattered over their surface. The rich alluvial lands

on the margins of rivers are exceptions to this rule. They are almost always heavily timbered, and towards the coast their character passes from A. to C.

There are some characteristics applicable to the whole of the large trees of this class. When at full maturity they are rarely sound at heart, and even when they are so, the immediate heart-wood is of no value on account of its extreme brittleness. In sawing up logs into scantlings or boards, the heart is always rejected. The direction in which the larger species split most freely is never from the bark to the heart (technically speaking, the "bursting way"), but in eccentric circles round the latter. Some few of the smaller species of forest trees are exceptions to this rule; such as the different species of *Casurina Banksia*, and other species belonging to the natural order *Proteaceæ*. The latter, however, with little exception, belonging to Class B. They split most freely the "bursting way," as do the oaks, &c., of Europe and America. A very serious defect prevails amongst a portion of the trees of this class, to such extent as to demand especial notice here. It is termed "Gum vein," and consists simply in the extravasation, in greater or less quantity, of the gum resin of the tree in particular spots, amongst the fibres of woody tissue, and probably where some injury has been sustained; or, which is a much greater evil, in concentric circles between successive layers of the wood. The former is often merely a blemish, affecting the appearance rather than the utility of the timber; but the latter, when occurring frequently in the same section of the trunk, renders it comparatively worthless, excepting for fuel. In the latter case, as the wood dries, the layers with gum veins interposing separate from each other; and it is consequently impracticable to take from trees so affected a sound piece of timber, excepting of very small dimensions. The whole of the species of *Angophora*, or apple-tree, and many of the *Eucalypti*, or Gums, are subject to be thus affected; and it is the more to be regretted, because it appears to be the only reason why many of the trees so blemished should not be classed amongst the most useful of the hard woods of the colony. Another characteristic among these hard woods is deserving of notice. Although the majority of them make excellent fuel, and are valuable on account of the comparative quantity of steam they are capable of generating, the greater part are slow to kindle, and a few of them will hardly burn at all. To this circumstance, probably, is to be attributed the small number of houses burnt in a climate and amongst a population likely to afford an unusual proportion of such accidents. Few of the species of *Eucalypti* are rich in potash, but several of the genus *Angophora* contain it abundantly.

It would be difficult to form even an approximate estimate of the number of species of Class A. producing good timber throughout the settled districts of New South Wales. It is believed that very few of them have a wide range; the same local names being applied many times over to different species in different districts.

Class B.—Barren scrub, covered either wholly with low shrubby vegetation without trees, or with short-stemmed stunted trees, rarely or never producing serviceable timber. The same dry character of vegetation prevails over this description of country as over the last. The "bush-fires" which sweep over these barren scrubs once, at least, in every four or five years, effectually prevent the species which do not grow with naked trunks from obtaining the dimensions they might otherwise be susceptible of acquiring. At each burning the majority are killed to the ground to be re-produced from the collar. Good specimens of their wood for illustration are, therefore, scarcely attainable. It may be observed, that the majority of the beautiful flowering shrubs of the colony have their habitats in this sort of country, which is always more or less rocky, stony, or sandy.

Class C.—Rich Brush or "Cedar Brush." Tracts of country rarely of great continuous breadth, but often alternating at short intervals with Class A., and prevalent only at moderate distances from the sea, or, at all events, to the eastward of the great dividing range.

This description of woodland often occupies country covered with rocks and stones but of such geological character that a rich soil results from their decomposition. It usually follows the course of streams; and, in country favourable, geologically speaking, to the formation of good land, the cedar brushes fill up the vallies and the gorges of ravines with their dense vegetation. They are to be found in the greatest perfection at Illawarra, a few miles from the open seacoast, upon natural terraces skirting the mountain side at various elevations, up to 1,500 feet, and upon rich alluvial plains, particularly in the districts to the northward of Sydney, where they are described to be of great continuous extent. They produce few shrubs, but a variety of trees of considerable altitude, frequently of comparatively slender growth, almost universally clothed with beautiful, dense, bright green foliage, their umbrageous character being much increased by the numerous lofty ligneous climbers ("bush ropes") which attain their topmost branches, and frequently throw themselves from tree to tree. At Illawarra and in some other districts four species of arborescent ferns and two noble species of palms add materially to the tropical aspect of this description of country. A few of the trees of Class A. are to be observed thinly scattered through the cedar brushes. In such case they often attain the most magnificent dimensions, but their general character remains unaltered.

During the heats of summer, the atmosphere of the cedar brushes is always much less dry, and the temperature more equable, than it is upon adjoining lands not clothed with rich vegetation. Bush fires rarely or never extend into their recesses, which are difficult to penetrate, even on foot, owing to the numerous irregularities of surface which prevail, and to the tangled nature of the vegetation. These difficulties apart, nothing can be imagined more charming to the beholder, especially where glades or natural openings occur, to enable him to comprehend the full grandeur of the still life around him. The extreme loftiness of the noble trees, which are thrown together in surprising variety, with stems, rarely cylindrical, but of the most picturesquely irregular forms, covered with mosses and orchids, and loaded aloft with huge masses of epiphytical ferns of exquisite beauty; all these vegetable wonders, viewed in the transparent, green, and almost sunless light, which even on the brightest days pervade their recesses, combined

with the delicious fragrance and the agreeable temperature, which in fine weather invariably characterises the cedar brushes, astonish and gratify the lovers of sylvan scenery. But although the senses are charmed, the difficulties in exploring them, to ascertain of what species of trees they consist, are very great; and still more serious are the obstacles to be surmounted in getting out new trees when found. The common use of the wood of the cedar (*Cedrela Australis*) in joiners' and cabinet work, and its extensive importation to the neighbouring colonies and to Europe, have induced the sawyers to penetrate into every nook from whence sawn timber could be dragged out. But in seeking out this particular tree, they would appear to have neglected all the rest. The most experienced amongst them have no names for a great number, and can give little information to be relied upon with regard to the qualities of their timber. They have been in the habit of confounding together numerous species under the general head of "brush trees." It requires careful and laborious investigation on the part of a stranger in these brushes to distinguish trees of even very different families; their foliage is often so far overhead, and so intermingled with that of the neighbouring trees and climbers, their trunks are so covered with epiphytes, and the light is so imperfect, that the tree often requires to be cut down to determine its identity; even then it frequently becomes further requisite to cut down several of the neighbouring trees, which have their branches attached to it by the "bush-ropes," before the tree will fall, and bring the foliage within the explorer's reach. The uncertainty of their periods of flowering and fruiting gives rise to further difficulty. On the present occasion, although they have been repeatedly examined at short intervals over a period of six months, comprising the seasons at which they might be expected to show flowers or fruit, it is remarkable how few have been detected in a fertile state. These few forming the exception rather than the rule with the particular species to which they belong, it would appear to be certain that the great majority of the trees of this class do not flower every year, and many of them only at long intervals. In proof of the intimate intermixture of many kinds of trees, it may be stated that, skirting a narrow track through a cedar brush for about half a mile, more than sixty species were observed, all growing within twenty or twenty-five yards of the track; of these, above three-fourths were of the stature of trees. It may be remarked, also, that no two brushes resemble each other precisely; fresh species of trees make their appearance in each succeeding brush, whilst others disappear. This characteristic seems to prevail wherever an opportunity of examining them closely has been afforded. The timber of the trees of this class differs remarkably from Class A. The grain is much finer; it is also, for the most part, sound at heart; and the heart-wood, if not shaken in the fall of the tree, may be used, as is the case, with the timber trees of Europe; even when a very large size, and not sound at the butt, they are usually perfectly so a little higher up; they differ generally, also from the trees of Class A., in splitting most freely the "bursting way." Although their qualities be so little known, it is not to be doubted that some of them would prove of great value. The very imperfect collection of them, which has been made on this occasion, affords evidence that some possess considerable beauty. At the same time, it should be observed, that the timber of a considerable portion is not durable when exposed to the weather or to damp; and that, as a class, they are, neither for strength nor lasting qualities, to be compared with the numerous, more coarsely grained, but almost imperishable woods of Class A.

Mr. Holmes, the Commissioner for British Guiana, in supplying the prices and descriptions of the various specimens of wood from that colony, has also sent the following information, which is most important in a commercial point of view:—

The colony is intersected by numerous large rivers, navigable for vessels of large burden, which can thus penetrate into the heart of primitive forests capable of affording an unlimited supply of timber, and as in many parts of the colony the trees are cut down in the immediate vicinity of these rivers and creeks, the cost of the wood, which has been given wherever it could be ascertained, depends alone on the price of labour for felling and squaring.

NEW SOUTH WALES.

No. 1.—Botanical name, *Tristiania nerifolia*. Natural order, MYRTACEÆ. Aboriginal name, OORAMILLY. Local name, WATER GUM.

"A very fine tree, with lofty cylindrical boll; timber close-grained and elastic, valuable for boat-building. Common at Illawarra, high up the side of the mountain; requires to be seasoned carefully."

The average diameter of the tree is from 30 inches to 50 inches. The average height, from 100 feet to 130 feet.

Specific gravity of specimen, 1·001, water being 1·000.

NOTE.—*The Weights are all reduced from Kilogrammes.*

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1¾	1	3967·2
2	1 1	1¾	1	4848·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
1102 lbs.	0·12 in.	0·05 in.
2204	0·24	0·11
3306	0·59	0·19
4408	. . . . .	0·27

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

The Dimensions of the Specimens for ascertaining the Crushing Strain, unless otherwise stated, are 1 inch cube.

Strain applied.	Amount yielded.
11020 lbs.	0·04 in.
Crushing Weight	11020 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204 lbs.	0·12 in.
4408	0·18
6612	0·27
8816	0·61

No. 2.—Botanical name, *Eucalyptus pillularis*. Natural order, MYRTACEÆ. Local name, MOUNTAIN ASH, or WHITE or WILLOW TOP.

"A remarkable specimen of Eucalyptus, found only on the summits of rocky or stony ranges; common over a wide extent of the great dividing range; with very dark-coloured rugged outer bark on the trunk, and smooth white bark on the branches; timber very hard, tough, and durable; much prized for poles and shafts of drays. Specimen collected very indifferent."

The average diameter of the tree is from 36 inches to 60 inches. The average height, from 100 feet to 130 feet.

Specific gravity of specimen, 1·110.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{7}{8}$	1	—
2	1 2	$1\frac{7}{8}$	1	7824·2
3	1 2	$1\frac{7}{8}$	1	8265·0
4	1 2	$1\frac{7}{8}$	1	8044·6
5	1 2	$1\frac{7}{8}$	1	7934·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102 lbs.	. . .	0·05 in.	5310 lbs.	. . .	0·22
2204	1·69 in.	0·09	6612	. . .	0·26
3306	. . .	0·13	7714	. . .	0·3
4408	. . .	0·17			

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
11020 lbs.	0·07 in.
Crushing Weight	11020 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
8816 lbs.	0·12 in.

No. 3.—Botanical name, *Eucalyptus media*. Natural order, MYRTACEÆ. Aboriginal name, YARR WARRA. Local name, BLACK BUTT.

"One of the largest of the Eucalypti, producing excellent, durable timber for house carpentry, or any purpose where strength and durability are the chief requisites; attains upwards of 30 feet in circumference, but in such cases is always very hollow."

The average diameter of the tree is from 36 inches to 72 inches. The average height is from 100 feet to 200 feet.

Specific gravity of specimens, 0·891.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{3}{4}$	4	3857·0
2	1 3	$1\frac{1}{8}$	1	8154·8
3	1 3	$1\frac{7}{8}$	1	7754·7
4	1 3	$1\frac{7}{8}$	1	5510·0
5	1 3	$1\frac{7}{8}$	1	6281·4
6	1 3	$1\frac{7}{8}$	1	6612·0
7	1 3	$1\frac{7}{8}$	1	8154·8
8	1 3	$1\frac{7}{8}$	1	7229·1

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102 lbs.	. . .	. . .	4408 lbs.	. . .	0·14 in.
2204	. . .	0·12 in.	5510	. . .	0·2
3306	0·56 in.	No appreciable difference.	6612	. . .	0·25
			7163	. . .	0·29
			7714	. . .	0·44

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4408 lbs.	0·03 in.
6612	0·04
8816	0·06
11020	0·18
Crushing Weight	11020·0 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204 lbs.	·11 in.	6612 lbs. . . .	0·60 in.
3304	·44	8816	0·64
4408	56		

No. 4. Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Aboriginal name, GNÀǴULI. Local name, WOOLLY BUTT.

"Very large and fine timber tree; its wood much prized for felloes of wheels, and other work requiring strength and toughness."

The average diameter of the tree is from 36 inches to 72 inches. The average height, from 100 feet to 150 feet.

Specific gravity of specimen, 1·005.

FIRST EXPERIMENT for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{3}{4}$	4	3085·6
2	1 3	$1\frac{7}{8}$	1	7273·2
3	1 3	$1\frac{7}{8}$	1	4518·2
4	1 3	$1\frac{7}{8}$	1	4738·6
5	1 3	$1\frac{7}{8}$	1	3857·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102 lbs.	. . .	0·03 in.	5510 lbs.	. . .	0·19 in.
2204	0·81 in.	0·04	6612	. . .	0·21
3306	. . .	0·08	7714	. . .	0·34
4408	. . .	0·13			

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
1102 lbs.	. Nothing perceptible.	4408 lbs. .	. 0·04 in.
2204 .	. 0·03 in.	5510 . .	. None perceptible.
3306 .	. No perceptible increase.	6612 . .	. 0·07 in.
	Crushing Weight .	. . .	7063·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
1102 lbs. . .	Not perceptible.	5510 lbs. . . .	0·31 in.
2204 . . .	0·07 in.	6612	0·34
3306 . . .	0·12	7714	0·36
4408 . . .	0·21	8816	0·4

No. 5. Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Aboriginal name, BARREMMA. Local name, IRON BARK.

"The timber of this rugged-looking tree is of the highest reputation for strength and durability; differs from the Iron Barks of Cumberland and Camden."

The average diameter of the tree is from 36 inches to 72 inches. The average height, is from 100 feet to 150 feet.

Specific gravity of specimen, 1·032.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In Square.	Feet.	Lbs.
1	4 6	$1\frac{7}{8}$	4	3416·2
2	1 3	$1\frac{1}{2}$	1	8485·4
3	1 3	$1\frac{1}{4}$	1	8816·0
4	1 3	$1\frac{1}{8}$	1	9190·7

REMARK.—*All the specimens evidenced great toughness, even after fracture, the parts separating with great difficulty.*

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102 lbs.	Not perceptible.	0·03 in.	5510 lbs.	. .	0·16 in.
2204	0·92 in.	0·05	6612	. .	0·19
3306	1·51	0·08	7163	. .	0·23
4408	. .	0·12	7714	. .	0·28

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
1102 lbs.	No perceptible yielding up to 8816 lbs.
8816	0·01 in.
9918	0·11
Crushing Weight .	. 9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
1102 lbs.	—
2204	0·05 in.
3306	—
4408	0·52, at which point the specimen crushed to pieces.

No. 6.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Aboriginal name, TDJETLAT BARROUL-GOURA. Local Name, BLUE GUM OF CAMDEN.

"A very valuable timber, harder, tougher, more inlocked in grain, and more durable than the common Blue Gum; but not obtainable of nearly such large size; one of the most durable woods known; excellent for naves and felloes of wheels, and for work under ground."

The average diameter of the tree is from 36 inches to 48 inches. The average height from 80 feet to 100 feet.

Specific gravity of specimen, 0·843.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1¾	4	2655·8
2	1 2	1¾	1	3306·0
3	1 3	1¾	1	5621·0
4	1 3	1¾	1	4518·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
1102 lbs.	0·02 in.	—
2204	0·04	0·10 in.
3306	. . . .	0·19

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204 lbs.	0·04 in.
4408	0·07
6612	0·09
8816	0·19
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
4408 lbs.	0·08 in.
6612	0·26
8816	0·64

No. 7.—Botanical name, *Eucalypta* Sp. Natural order, MYRTACEÆ. Aboriginal name, NGNOOROO-WARRA. Local name, BOX OF ILLAWARRA.

"Another Eucalyptus, with magnificent timber; the wood exceedingly hard, tough, and durable."

The average diameter of the tree is from 48 inches to 72 inches. The average height from 120 feet to 180 feet.

Specific gravity of specimen, 1·170.

First Experiment, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{3}{4}$	4	4518·2
2	1 1	$1\frac{7}{8}$	1	11240·4

Second Experiment, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102 lbs.	0·04 in.	None perceptible.	5510 lbs.	. .	1·1 in.
2204	0·05	0·02 in.	6612	. .	1·13
3306	0·14	0·05	7163	. .	0·16
4408	0·52	0·09	7714	. .	0·19

Third Experiment, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8816 lbs.	0·05 in.
Crushing Weight	9920·7 lbs.

Fourth Experiment, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204 lbs.	0·05 in.
3306	0·06
4408	Split all to pieces.

No. 8.—Botanical name, *Eucalyptus corymbosa*. Natural order, Myrtaceæ. Aboriginal name, Bourrayrra-gourroo. Local name, True Box of Camden.

"A low, branching species of Eucalyptus, not very abundant; timber of excellent quality."

The average diameter of the tree is from 18 inches to 36 inches. The average height, from 30 to 50 feet.

Specific gravity of specimen, 0·970.

First Experiment, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{7}{8}$	4	3086·4
2	1 3	$1\frac{7}{8}$	1	4628·4
3	1 3	$1\frac{7}{8}$	1	4518·2
4	1 3	$1\frac{7}{8}$	1	4518·2
5	1 3	$1\frac{7}{8}$	1	4959·0
6	1 3	$1\frac{7}{8}$	1	5333·6

Second Experiment, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
2204·6 lbs.	. . . .	0·04 in.
3306·9	. . . .	0·11
4409·2	. . . .	0·20

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818 lbs.	00·9 in.
Crushing Weight	8818 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·08 in.	6613·8 lbs.	0·55 in.
3306·9	0·47	7164·9	0·58
4409·2	0·50	7716·1	0·59
5611·5	0·53		

No. 9.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Aboriginal name, BOUR-ROUGNE. Local name, STRINGY BARK OF CAMDEN.

"A species yielding timber much prized for flooring boards and house carpentry, of considerable strength and durability; differs from the Stringy Bark of the Coast."

The average diameter of the tree is from 24 inches to 54 inches. The average height, from 50 feet to 100 feet.

Specific gravity of specimen, 0·864.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1⅝	4	2755·7
2	1 4	1⅝	1	3086·4
3	1 4	1⅝	1	2888·0
4	1 4	1⅝	1	3262·3

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
1102·3 lbs.	0·04 in.	—
2294·6	0·84	0·08 in.

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.
4409·2	0·04
6613·8	0·08
8818·4	0·12
Crushing Weight	8818·4 lbs.

FOURTH EXPEIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·26 in.
4409·2	0·52
6613·8	0·58

No. 10.—Botanical name, *Casuarina* Sp. Natural order, CASUARINACEÆ. Aboriginal name, COOM-BAU. Local name, FOREST SWAMP OAK.

"Small tree, usually forming small, detached, dense thickets in open forest ground, where the situation is moist; wood, tolerably close, prettily marked, not durable, but much used where lightness and toughness are required."

The average diameter of the tree is from 12 inches to 30 inches. The average height, from 40 feet to 80 feet.

Specific gravity of specimen, 0·661.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1½	4	2314·8
2	1 3	1½	1	4629·6
3	1 3	1½	1	3416·2
4	1 3	1½	1	3195·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
2204·6 lbs.	1·49 in.	0·09 in.
3306·9		0·18
4409·2		0·30

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.
4409·2	0·05
Crushing Weight	5511·5 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·18 in.
4409·2	0·35
6613·8	0·42
8818·4	0·46

No. 11.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Aboriginal name, BARROUL-GOURRA. Local name, BASTARD BOX.

"The most unsightly, perhaps, of all the Eucalypti in appearance, generally very much decayed at the heart before it attains its full stature. Its timber is, nevertheless, in high repute for great strength and durability; for the poles and shafts of drays and carts, and for the spokes of wheels, it is supposed to have no equal."

The average diameter of the tree is from 24 inches to 48 inches. The average height from 60 feet to 100 feet.

Specific gravity of specimen, 1·115.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1½	4	3571·3
2	13 7½	1½	1	5510·0
3	1 3	1½	1	6435·0
4	1 3	1½	1	5730·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
1102·3 lbs.	0·05 in.	0·08 in.
2204·6	0·83	0·12
3306·9		0·19
4009·2		0·23

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
6613·8 lbs.	0·02 in.
8818·4	0·03
Crushing Weight	9700·2 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·06 in.—crushed to pieces.

No. 12.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Local name, SWAMP MAHOGANY, CAMDEN.

"A fine species, with handsome foliage, yielding fine timber, but not of such strength and durability as many other kinds."

The average diameter of the tree is from 36 inches to 48 inches. The average height, from 80 feet to 100 feet.

Specific gravity of specimen, 0·864.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1 1/16	4	2425·0
2	14 0	1 1/16	12	6061·0
3	14 0	1 1/16	12	5289·6

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
2204·6 lbs.	0·97 in.	—

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.
4409·2	0·05
6613·8	0·07
8818·4	0·12
Crushing Weight	8814·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·12 in.	6613·8 lbs.	0·40 in.
3306·9	0·18	7716·1	0·41
4409·2	0·24	8818·4	0·45
5511·5	0·35		

No. 13.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Aboriginal name, TERRI-BARRI. Local name, ROUGH-LEAVED, ROUGH-BARKED IRON BARK.

"One of the species which yield the strongest and most durable timber; bark very rugged and durable. This tree has been proposed for their emblem by the colonists of New South Wales."

The average diameter of the tree is from 24 inches to 48 inches. The average height, from 80 feet to 100 feet.

Specific gravity of specimen, 1·016.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1 1/16	4	4519·4
2	1 3	1 1/16	1	8154·8
3	1 3	1 1/16	1	8265·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
2204·6 lbs.	0·03 in.	0·05 in.
3306·9	0·70	0·09
4409·2	1·53	0·11
5511·5	. . . .	0·16
6613·8	. . . .	0·20
7716·1	. . . .	0·27

THIRD EXPERIMENT for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
1023·0 lbs.	0·09 in.
13227·6	0·10
Crushing Weight	13227·6 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs. . . .	0·05 in.	5511·7 lbs. . . .	0·66 in.
3306·9 . . .	0·53	6613·8 . . .	0·67
4409·2 . . .	0·57	7716·1 . . .	0·69

No. 14.—Botanical name, *Tristania* Sp.. Local name, HICKORY.

"A species, apparently differing from No. 1, common at Illawarra, and in high repute for toughness and strength. Collected at Brisbane Water, where it grows on low, moist land, and never attains the dimensions of No. 1, at Illawarra. The latter was found only high up the mountain. Not having found a single specimen of No. 14 in a state of fructification, the question of the identity of the two Nos. seems to be doubtful."

The average diameter of the tree is from 24 inches to 36 inches. The average height, from 80 feet to 120 feet.

Specific gravity of specimen, 0·748.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	1½	4	4188·7
2	1 2	1¼	1	4408·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
1102·3 lbs.	0·02 in.	0·06 in.
2204·6	0·09	0·14
3306·9	0·94	0·21
4409·2	—	0·32

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
6613·8 lbs.	0·11 in.
Crushing Weight	7052·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·27 in.
3306·9	0·44
5511·5	0·49
7716·1	0·52

No. 15.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Local name, MAHOGANY.

"A noble timber tree; its wood much prized for its strength and durable qualities. One of the specimens is from a principal rafter of the roof of Parramatta Church, built in 1798. One face of this specimen shows the original surface of the rafter."

The average diameter of the tree is from 30 inches to 70 inches. The average height, from 60 feet to 130 feet.

Specific gravity of specimen, 0·952.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{7}{8}$	4	2976·1
2	1 2	$1\frac{7}{8}$	1	8485·4
3	1 2	$1\frac{7}{8}$	1	7559·7

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
2204·6 lbs.	0·43 in.	0·04 in.
3306·9	. . . . .	0·08
4409·2	. . . . .	0·11
5511·5	. . . . .	0·15
6613·8	. . . . .	0·20

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·03 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
3306·9 lbs. . . .	0·31 in.	6613·8 lbs. . . .	0·40 in.
4409·2 . . .	0·33	7716·1 . . .	0·44
5511·5 . . .	0·36	8818·4 . . .	0·46

No. 16.—Botanical name, *Eucalyptus* Sp. Natural order, MYRTACEÆ. Local name, GREY GUM.

"A fine hard wood timber, from the neighbourhood of Windsor."

The average diameter of the tree is from 24 inches to 48 inches. The average height, from 60 feet to 100 feet.

Specific gravity of specimen, 0·927.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	5 0	$1\frac{7}{8}$	4	3507·3
2	1 3	$1\frac{7}{8}$	1	7163·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
204·6 lbs.	0·02 in.	—
409·2	0·44	—

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.	8818·4 lbs.	0·08 in.
4409·2	0·04	9920·7	0·12
6613·8	0·06		

Crushing Weight . . . . . 9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·07 in.
4409·2	0·44
6613·8	0·63
8818·4	0·67

BRITISH GUIANA.

No. 17.—Aboriginal name, CABACALLI. Local name, CABACALLI.

"From Berbice River; grows tall and straight, and will square from 12 to 18 inches for 40 to 50 feet in length. The wood is heavy and close-grained: it possesses a bitter principle which protects it against the attacks of worms, and renders it durable under water. It must, however, be fastened with copper nails. Of the branches, timbers and knees for every description of craft are made, which are quite as lasting as those of Mora."

Its cost in Guiana, at a wood-cutting establishment, is 1*s.* to 1*s.* 4*d.* per cubic foot.
Specific gravity of specimen, 0·893.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	1 2½	2	1	7163·0
2	1 2½	2	1	7163·0

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.
2204·6 lbs.		0·04 in.
3306.9		0·09
4409·2		0·12
5511·5		0·17
6613·8		0·21

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·15 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.	6613·8 lbs.	0·36 in.
3303·9	0·06	7716·1	0·41
4409·2	0·26	8818·4	0·45
5511·5	0·30		

No. 18.—Botanical name, *Mora Excelsa.* Aboriginal name, MORA. Local name, MORA.

"From Berbice River, the most majestic tree of the forests of Guiana, attains a height of from 100 to 150 feet, and is frequently found 60 feet in height without a branch; when of that length it will square 18 or 20 inches, but is then seldom sound throughout. The wood is extremely tough, close and cross-grained, so that it is difficult to split, which renders it peculiarly adapted for shipbuilding. The trunk makes admirable keels, timbers, and beams, and the branches, having a natural crookedness of growth, are unsurpassed as knees. Were men-of-war ceiled with this wood, little mischief would be occasioned by splinters during action. In most respects it is superior to oak, particularly in its exemption from dry rot. This, as well as Greenheart, ranks as one of the

eight first-class woods at Lloyd's for shipbuilding. It is abundant along the rivers of the coast region; it grows luxuriantly on sand reefs and on tracts of barren clay, known as "Mora clay." The importance of the Mora in naval architecture is now fully recognized in Great Britain, and a new export trade has been opened to the colony. On the upper Barima this tree is so abundant, and grows to such a size, that the whole British Navy might be reconstructed merely from the trees which line its banks,—a circumstance well worth consideration, for the river being navigable to vessels of 12 feet draught, the craft intended for the transport of the timber might load at the very spot where the trees are cut down. The bark of the Mora is used for tanning; the seeds also are said to be beneficial in cases of diarrhœa. The specimen sent is indifferent."

Cost at wood-cutting establishment in Guiana, 1*s.* to 1*s* 6*d.* per cubic foot.

Specific gravity of specimen, 0·922, water being 1·000.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	9697·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102·3 lbs.	0·02 in.	—	5511·5 lbs.	0·13 in.	—
2204·6	0·05	—	6613·8	0·16	—
3306·9	0·09	—	7164·9	0·19	—
4409·2	0·12	—			

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·10 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·17 in.	5511·5 lbs.	0·33 in.
3306·9	0·10	6613·8	0·38
4409·2	0·19	8818·4	0·50

No. 19.—Botanical name, *Piratinera Guianensis, Aubl.* Aboriginal name, BOURRA COURRA PAIRA. Local name, LETTER WOOD, or SNAKE WOOD.

"From Berbice River; this tree is *scarce* within several hundred miles of the seacoast, is often from 50 to 70 feet high, and from 2 to 3 feet in diameter. The outer part of the wood is white and very hard; the heart is of great weight, hardness, and solidity; variegates with black spots of different size and figure, which gives rise to its name, 'Letter Wood,' and 'Snake Wood.'"

It is susceptible of a brilliant polish, but the small size of the mottled part, and its great value even in the colony, limits its use almost entirely to veneering, to picture frames, and to small pieces of furniture.

Cost, 8*d.* per lb. Specific gravity of specimen, 0·999.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	In.	Lbs.
1	1 0	2	9½	14215·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
2204·6 lbs.	0·02 in.	Nil.	6613·8 lbs.	0·08 in.	Nil.
3306·9	0·03		7164·9	0·09	
4409·2	0·05		7716·1	0·10	
5511·5	0·07				

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
13227·6 lbs.	0·03 in.
Crushing Weight	14105·6 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.	6613·8 lbs.	0·17 in.
3306·9	0·08	7716·1	0·22
4409·2	0·10	8818·4	0·27
5511·5	0·14		

No. 20.—Botanical name, ——. Aboriginal Name, HOUBABALLI. Local Name, HOUBABALLI.

"A light brownish wood, beautifully variegated with black and brown streaks; easily worked, and makes beautiful furniture and cabinetwork. It may be had from 15 to 20 inches square, and from 40 to 70 feet long. The tree is by no means scarce, but is frequently found hollow in the centre, which often renders it useless."

Price in Guiana, at a wood-cutting establishment, 1*s.* 6*d.* to 2*s.* per cubic foot.

Specific gravity of specimen, 0·810.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	4518·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·08 in.
3306·9	0·13
4409·2	0·26

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.
4409·2	0·04
5511·5	0·13
Crushing Weight	5411·5 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·45 in.
4409·2	0·51
6613·8	0·55
8818·4	0·60

No. 21.—Botanical name, *Lecythis grandiflora, Aubl.* Aboriginal name, WADADURI. Local name, MONKEY POT.

"This tree is plentiful throughout the colony. It grows tall, straight, and to a large size. The wood is to be had from 15 to 20 feet in length, and from 4 to 6 inches in diameter. It is very close, tough, and elastic, and is in great repute for gig-shafts. The Indians make their arrow points of this wood. The specimen sent has been injured by water."

Price in Guiana, at a wood-cutting establishment, 1*s.* 6*d.* to 2*s.* per cubic foot.
Specific gravity of specimen, 0·941.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	10689·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·03 in.	6613·8 lbs.	0·11 in.
3306·9	0·04	7164·9	0·13
4409·2	0·07	7716·1	0·14
5511·5	0·09		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
12125·3 lbs.	0·04 in.
Crushing Weight	12125·3 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·08 in.
4409·2	0·59
6613·8	0·60
8818·4	0·62

No. 22.—Botanical name, *Lucuma Bomplandii, H. B.* Aboriginal name, BARTABALLI. Local name, BARTABALLI.

"Is a tree of large size, and plentiful. This wood is white, rather light, splits freely, and is good for staves, chairs, and the inside work of houses. It bears an agreeable fruit."

Specific gravity of specimen, 0·640.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	0 14	1¼	1	5289·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·05 in.
2504·6	0·10
3306·9	0·15
4409·2	0·20

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·04 in.	7716·1 lbs.	1·00 in.
4409·2	0·06	8818·4	1·04
6613·8	0·08		
Crushing Weight			8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·35 in.	6613·8 lbs.	0·51 in.
3306·9	0·42	8818·4	0·55
4409·2	0·47		

No. 23.—Botanical name, ——. Aboriginal name, COWASSA. Local name, WILD MAMMEE.

"A hard, close-grained wood, of a rich brown colour, prettily waved, and fitted for furniture and cabinetwork."

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
	1 2	1½	1	4363·9

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·07 in.
3306·9	0·19

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
11023·0 lbs.	0·04 in.
13227·6	0·05
Crushing Weight	13227·6 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·10 in.	5613·8 lbs.	0·51 in.
3306·9	0·18	7716·1	0·53
4409·2	0·45	8818·4	0·55
6511·5	0·48		

No. 24.—Botanical name, *Copaifera Pubiflora* and *Bracteata, Benth.* Aboriginal name, MARIWAYANA. Local name, PURPLE HEART.

"Rather a scarce tree in the coast regions, being found chiefly in the mountainous tracts above the cataracts. There are several varieties or species, but all much alike, possessing great strength and durability. Used for mortar beds, being adapted for sustaining the shocks produced by the discharge of artillery."

Price in colony, 1*s.* 6*d.* to 2*s.* per cubic foot. Specific gravity of specimen, 0·679.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	6391·

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·02 in.
2204·6	0·06
3306·9	0·09
4409·2	0·12
5511·5	0·16

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.
4409·2	0·06
6613·8	0·08
8818·4	0·11
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.
4409·2	0·10
6613·8	0·18
8818·4	0·56

No. 25.—Botanical name, ——. *Aboriginal name,* WAMARA. Local name, BROWN EBONY.

"A hard, cross-grained wood, not apt to split, and therefore well adapted for ship-building. Sir R. Schomburgh describes it as a scarce tree, attaining a great height; but the only part used is the heart, which is dark brown, and often streaked. Its hardness and weight cause it to be preferred by the Indians for their war-clubs. It may be had from 6 to 12 inches square, and from 20 to 40 feet long."

Specific gravity of specimen, 1·034.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	12122·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·01
2204·6	0·06
4409·2	0·08
5511·5	0·09
6613·8	0·10
7164·9	0·13

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
11023·0 lbs.	0·07 in.
12125·3	0·09
Crushing Weight	12566·2 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·06 in.	6613·8 lbs.	0·37 in.
3306·9	0·10	7716·1	0·45
4409·2	·11	8818·4	0·55

No. 26.—Botanical name, *Erythrina corallodendron* (Lin.) Aboriginal name, Baracara. Local name, Baracara.

"From Berbice River. A hard, close, and even-grained wood. The tree produces the red seeds of which necklaces, bracelets, &c., are made."

Specific gravity of specimen, 0·809.

First Experiment, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	1 2	2	1	8954·9
2	1 5	2	1	8044·6

Second Experiment, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102·3 lbs.	0·03 in.	0·15 in.	5511·5 lbs.	0·24 in.	0·34 in.
2204·6	0·09	0·19	6613·8	0·30	0·45
3306·9	0·12	0·22	7164·9	0·33	—
4409·2	0·16	0·27	7716·1	0·36	0·68

Third Experiment, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.
4409·2	0·03
6613·8	0·07
8818·4	0·10
Crushing Weight	8818·4 lbs.

Fourth Experiment, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·24 in.	6613·8 lbs.	0·52 in.
3306·9	0·34	7716·1	0·55
4409·2	0·42	8818·4	0·56
5511·5	0·51		

No. 27.—Botanical name, *Nectandra Rodiæi* (Schomb.) Aboriginal name, Sipiru, Bibiru. Local name, Greenheart (yellow variety).

"From Masaruni River. This tree is very abundant within 100 miles of the coast region, and its timber, squaring from 18 to 24 inches, may be had without a knot from 60 to 70 feet long. It is a fine, even-grained, hard wood, well adapted for planking vessels, house-frames, wharves, bridges, and other purposes where great strength and durability are required. As it is unsurpassed in resistance to tensile and compressive strains, it is admirable for kelsons and for ship timbers. It ranks as one of the eight first-class woods at Lloyd's for shipbuilding."

Specific gravity of specimen, 1·052.

First Experiment, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	In.	Lbs.
1	0 11½	2	9½	14528·0

Second Experiment, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·02 in.
3306·9	0·03
4409·2	0·05
5511·5	0·07
6613·8	0·03
7716·1	0·09

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
4409·2 lbs.	0·03 in.	11023·0 lbs.	0·09 in.
6613·8	0·05	12125·3	0·20
8818·4	0·07		
Crushing Weight	12125·3 lbs.		

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·04 in.	5511·5 lbs.	0·10 in.
3306·9	0·06	6613·8	0·11
4409·2	0·08		

No. 28.—Botanical name, *Nectandra Rodæi* (SCHOMB.) Aboriginal name, SIPIRI BIBIRU. Local name, GREENHEART (black variety).

"From Masaruni River. This wood is used for the same purposes as the yellow Greenheart, but it is considered even more durable. It is a handsome wood, and takes a high polish. It is distinguished from the common Greenheart only by the colour of the wood, but it is so scarce in proportion to the brown or yellow, that not more than 1 in 20 of trees cut down are found to belong to this variety. This wood is in great request, on account of its well-known durability, being preferred to all others for windmill shafts, spindles, and mill works in general."

Specific gravity of specimen, 1·089.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	In.	Lbs.
—	0 11½	2	9½	13224

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·01 in.
4409·2	0·03
5511·5	0·05
6613·8	0·06
7716·1	0·08

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
15432·2 lbs.	0·11 in.
Crushing Weight	15432·2 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.
4409·2	0·38
6613·8	0·43
8818·4	0·51

No. 29.—Botanical name, *Dipteryx odorata*, (Wills.) Aboriginal name, CUAMARA. Local name, TONKA.

"This tree is not very plentiful in the colony. The timber may be had from 40 to 50 feet long, and 18 to 20 inches square. It is hard, tough, and durable in an eminent degree, and it is said that a piece one inch square, and of a given length, will bear 100 lbs. more weight than any other timber in Guiana of the same dimensions. It is therefore peculiarly adapted for any purpose where resistance to great pressure is desired. It is used for shafts, mill-wheels, and cogs. This tree yields the well-known 'Tonka Bean.'"

Price in colony, 1*s.* 6*d.* to 2*s.* per cubic foot. Specific gravity of specimen, 0·987.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 2	In. square. 2	Foot. 1	Lbs. 10469·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
1102·3 lbs.	0·03 in.	5511·5 lbs.	0·10 in.
2204·6	0·04	6613·8	0·12
3306·9	0·06	7164·9	0·13
4409·2	0·09	7716·1	0·16

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
11023 lbs.	0·11 in.
Crushing Weight	11463·9 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.	6613·8 lbs.	0·10 in.
4409·2	0·06	7716·1	0·29
5511·5	0·08	8818·4	0·34

No. 30.—Botanical name, ———. Aboriginal name, DUCALIBALLI. Local name, DUCALIBALLI.

"This tree is of large size, but not plentiful. The timber may be had 40 feet long, but seldom more than 20 inches in diameter. It is a deep red close-grained wood, more even and compact than mahogany, and takes a high polish. It is in great repute for turning and cabinetwork. It resembles, or is perhaps identical with, the Brazilian beef-wood."

Price in colony, 2*s.* 6*d.* to 3*s.* per cubic foot. Specific gravity of specimen, 0·910.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 2	In. square. 2	Foot. 1	Lbs. 9367·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·02 in.	6613·8 lbs.	0·10 in.
3306·9	0·04	7164·9	0·12
4409·2	0·06	7716·1	0·13
5511·5	0·09		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
13227·6 lbs.	0·06 in.
Crushing Weight	13227·6 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·07 in.	6613·8 lbs.	0·23 in.
4409·2	0·09	7716·1	0·35
5511·5	0·15	8818·4	0·57

No. 31.—Botanical name, *Centrolobium robustum* (Mart.) Aboriginal name and local name, CARTAN.

"From Demerary River. - A very rare wood, of a rich orange colour, like deal in its grain, but much harder and heavier. It reaches a height of 80 to 100 feet, and being easily worked, and of a handsome colour, promises to become of great interest to cabinet makers."

Specific gravity of specimen, 0·703.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	In.	In. square.	Foot.	Lbs.
1	$12\frac{7}{8}$	2	1	4959·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·04 in.
2204·6	0·06
3306·9	0·11
4409·2	0·17
5511·5	0·29

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·05 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·08 in.	6613·8 lbs.	0·43 in.
3306·9	0·26	7716·1	0·46
4409·2	0·35	8818·4	0·50
5511·5	0·40		

No. 32.—Botanical name, ——. Aboriginal and local name, KAIEERI-BALLI.

"From Berbice River. An excellent wood for beams, rafters, and plates of houses."

Specific gravity of specimen, 0·870.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 5	2	1	6391·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·01 in.
2204·6	0·05
3306·9	0·09
4409·2	0·13
5511·5	0·22

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818·4 lbs.	0·05 in.
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·14 in.
4409·2	0·29
6613·8	0·38
8818·4	0·50

No. 33.—Botanical name, ——. Aboriginal and local name, BUHURADDA.

"Is very plentiful, and used for similar purposes as the preceding. This specimen is damaged by water."
Specific gravity of specimen, 0·814.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 7	2	1	9477·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection. Specimen 1.	Transverse Strain.	Deflection. Specimen 1.
2204·6 lbs.	0·05 in.	6613·8 lbs.	0·17 in.
3306·9	0·07	7164·9	0·22
4409·2	0·10	7716·1	0·24
6511·5	0·13		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.	8818·4 lbs.	0·09 in.
4409·2	0·05	11023·0	0·10
6613·8	0·08	12125·3	0·11

Crushing Weight . . . . 12125·3 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·12 in.
6613·8	0·58
8818·4	0·60

No. 34.—Botanical name, *Eperua falcata, Aubl.* Aboriginal name and local name, WALLABA.

"From Berbice River. This wood is of a deep red colour, and is hard and heavy, but splits freely and smoothly, and is much used for shingles, staves, palings, posts, house frames, &c. It is impregnated with a resinous oil, which makes it very durable, both in and out of water. A roof well shingled with this wood will last more than 40 years. The tree is very abundant throughout the colony, growing generally on the banks of rivers. It may be cut 30 or 40 feet long, and 15 to 20 inches square."
Cost in colony 10*d.* to 1*s.* 6*d.* per cubic foot. Specific gravity of specimen, 1·035.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
	1 5	2	1	5510·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·04 in.
3306·9	0·06
4409·2	0·09
5511·5	0·11

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
6613·8 lbs.	0·06 in.
Crushing Weight	6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·16 in.
3306·9	0·49

No. 35.—Botanical name, *Lecythis ollaria* (LIN.) Aboriginal and local name, KAKARALLI.

"This wood is very abundant, grows tall and straight, and may be had from 6 to 14 inches square, and 30 to 40 feet long. It is heavy, hard, and close-grained, and more durable than Greenheart in salt water, from its property of resisting the depredations of the sea-worm and barnacle. On this account it is much employed in the construction of wharfs, sluices, &c. It is also used for house-frames. The bark is easily stripped off, and consists of numerous layers, which the Indians separate by beating with a stick; when separated they have the appearance of thin satin paper. They are dried in the sun, and used as wrappers for cigars."

Price in colony, 1*s.* to 1*s.* 6*d.* per cubic foot. Specific gravity of specimen, 1·103.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	9587·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·04 in.	6613·8 lbs.	0·17 in.
3306·9	0·07	7164·9	0·20
4409·2	0·10	7716·1	0·25
5511·5	0·14		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·06 in.	8818·4 lbs.	0·12 in.
4409·2	0·08	11023·0	0·15
6613·8	0·10	13227·6	0·18
Crushing Weight		13227·6 lbs.	

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·08 in.
4409·2	0·20
6613·8	0·34

No. 36.—Botanical name, ——. Aboriginal and local name, SILVERBALLI (yellow variety).

"This tree grows to a great size, but is then often hollow. It will, however, square sound from 10 to 14 inches, and from 40 to 50 feet long. The wood is lighter than water, and contains a bitter principle which resists the attack of worms, hence it is much used in the colony for the outside planking of vessels and boats. It is also used for masts and booms. There are four varieties or species of this tree, distinguished as Black, Brown, Yellow, and White Silverballi; of these the latter is least esteemed."

Price in colony, from 1*s.* 6*d.* to 2*s.* per cubic foot. Specific gravity of specimen, 0·546.

FIRST EXPERIMENT for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 5	2	1	4297·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	00·5 in.
3306·9	0·14

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
7716·1 lbs.	0·08 in.
Crushing Weight	7716·1 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·44 in.
4409·2	0·56
6613·8	0·59
8818·4	0·62

No. 37.—Botanical name, *Xguianensic carapa.* Local name, CRABWOOD.

"This tree is plentiful, grows tall and straight, and may be cut from 40 to 60 feet in length, with a square of 14 or 16 inches. The wood is light, and as it takes a high polish, makes excellent furniture. It is also much used for floors, partitions, and doors in the houses of the wealthy. Masts and spars are formed of it, and it is sometimes employed for sugar hogsheads, and even for shingles, as it splits freely and smoothly. There are two varieties, Red and White. The seeds yield 'Crab Oil,' and the bark is useful for tanning, so that this tree ranks among the most useful in the colony."

Price in colony, 1*s.* to 1*s.* 6*d.* per cubic foot. Specific gravity of specimen, 0·603.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 5	2	1	5510·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·04 in.
2204·6	0·08
3306·9	0·12
4409·2	0·18
5511·5	0·30

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818·4 lbs.	0·05 in.
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·35 in.
4409·2	0·45
6613·8	0·50
8818·4	0·54

No. 38.—Botanical name, *Icica altissima, Aubl.* Aboriginal name, WARRACOORI. Local name, WHITE CEDAR.

"From Berbice River. Grows abundantly in the low grounds. It is a light, aromatic wood, easily worked; it splits freely, and is therefore well fitted for staves. During the American War it was used for sugar hogsheads. It is frequently employed for the frames and inside of work of houses. Oars and paddles are also made of it, and even canoes. The bark in decoction is used for the Indian malady called the 'Caribisi sick.' This specimen is from a young tree."

Price in colony, 1*s.* to 1*s.* 6*d.* per cubic foot. Specific gravity of specimen, 0·771.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	7163·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·06 in.
3306·9	0·10
4409·2	0·14
5511·5	0·21
6613·8	0·29
7164·9	0·37

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818·4 lbs.	0·04 in.
9920·7	0·07
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·10 in.
4409·2	0·30
6613·8	0·54
8818·4	0·57

No. 39.—Botanical name, *Hymenæa Courbaril* (LIN.) Aboriginal name, SIMERI. Local name, LOCUST TREE.

"This tree is abundant in the colony, and often attains the height of 60 or 80 feet before it throws out a branch, and has a diameter of 8 to 9 feet. The wood is close-grained, hard, and compact, of a fine brown, streaked with veins, and takes a beautiful polish. As it does not split or warp, it is well adapted for mill timbers and engine beds. A considerable quantity is exported to England to be used as trenails in planking vessels and in beams and planks for fitting up steam engines. The tree yields the gum animi of commerce."

Price in colony, from 1*s.* to 1*s.* 6*d.* per cubic foot. Specific gravity of specimen, 0·707.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 1¼	2	1	6171·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·10
3306·9	0·17
4409·2	0·24
5511·5	0·34

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.
4409·2	0·04
6613·8	0·06
8818·4	0.10
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·33 in.
4409·2	0·37
6913·8	0·44
8818·4	0·60

No. 40.—Botanical name, ——. Aboriginal and local name, BUCKATI.

"A hard, compact wood, of a rich brownish yellow colour."
Specific gravity of specimen, 0·812.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	7714·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·03 in.
3306·9	0·06
4409·2	0·10
5511·5	0·14
6613·8	0·20
7164·9	0·26

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·07 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·09 in.
4409·2	0·33
6613·8	0·45
8818·4	0·50

No. 41.—Botanical name, ——. Aboriginal and local name, SIRABULIBALLI.

"A wood of small size, but very hard and compact, well adapted for framing."
Specific gravity of specimen, 0·838.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 5	In. square. 2	Foot. 1	Lbs. 9920·7

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·03 in.	7164·9 lbs.	0·23 in.
3306·9	0·08	7716·1	0·29
4409·2	0·11	8818·4	0·32
5511·5	0·16	9920·7	0·40
6613·8	0·18		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·01 in.	8818·4 lbs.	0·06 in.
4409·2	0·03	9920·7	0·19
6613·8	0·04		

Crushing Weight . . . 9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·04 in.	6613·8 lbs.	0·49 in.
4409·2	0·40	7716·1	0·50
5511·5	0·46	8818·4	0·52

JAMAICA.

No. 42.—Botanical name, ——. Local name, BOXWOOD.

Used for framing. Specific gravity of specimen, 0·690.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 1¾	In. square. 2	Foot. 1	Lbs. 5511·5

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
Nil.	Nil.

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	01.0 in.
5511·5	05.0
8818·4	08.0

Crushing Weight . . . . . 8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.	6613·8 lbs.	0·49 in.
3306·9	0·16	7716·1	0·51
4409·2	0·28	8818·4	0·54
5511·5	0·40		

No. 43.—Botanical name, *Erythroxylon areolatum*. Aboriginal and local name, IRON WOOD, or RED WOOD.

A small tree, 16 or 18 feet high, and 5 or 6 inches in diameter. Useful for furniture and flooring. Specific gravity of specimen, 0·987.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	1¼	1	9369·5

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection. Specimen 1.	Transverse Strain.	Deflection. Specimen 1.
1102·3 lbs.	0·02 in.	6613·8 lbs.	0·21 in.
2204·6	0·07	7164·9	0·34
3306·9	0·09	7716·1	0·38
4409·2	0·13	8818·4	0·44
5511·5	0·16		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
17636·8 lbs.	0·13 in.
Crushing Weight	17636·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
4409·2 lbs.	0·02 in.
11023·0	0·08

No. 44.—Botanical name, *Amyris*. Aboriginal and local name, SATIN CANDLEWOOD.

Specific gravity of specimen, 0·956.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	12232·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection. Specimen 1.	Transverse Strain.	Deflection. Specimen 1.
1102·3 lbs.	0·02 in.	7164·9 lbs.	0·17 in.
2204·6	0·06	7716·1	0·18
3306·9	0·08	8818·4	0·21
4409·2	0·11	9920·7	0·24
5511·5	0·13	11023·0	0·31
6613·8	0·16	12125·3	0·42

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.	8818·4 lbs.	0·06 in.
4409·2	0·04	11023·0	0·07
6613·8	0·05		
Crushing Weight	12562·8 lbs.		

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
4409·2 lbs.	0·11 in.
5511·5	0·30
6613·8	0·55
8818·4	0·58

No. 45.—Botanical name, *Guatteria virgata*. Aboriginal and local name, LANCE WOOD.

"Excellent timber where strength and elasticity are required ; tough."
Specific gravity of specimen, 0·675.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearings between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Feet.	Lbs.
1	1 2	1¼	1	6612·0
2	1 2	2	1	7714·0

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
1102·3 lbs.	0·03 in.	—	5511·5 lbs.	0·3¼ in.	0·22 in.
2204·6	0·09	0·06 in.	6613·8		0·30
3306·9	0·13	0·10	7164·9		0·39
4409·2	0·19	0·15			

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2304·6 lbs.	0·04 in.
4409·2	0·05
6613·8	0·07
Crushing Weight	6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·19 in.	5511·5 lbs.	0·40 in.
3306·9	0·30	6613·8	0·43
4409·2	0·37	8818·4	0·46

No. 46.—Botanical name, *Brya ebenus*. Aboriginal and local name, BLACK HEART EBONY, or WEST INDIAN EBONY.

"Very hard and ponderous, and susceptible of a very high polish ; very common in the savannahs and dry hills."
Specific gravity of specimen, 1·193.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	1¾	1	8485·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·03 in.
3306·9	0·05
4409·2	0·09
5511·5	0·12
6613·8	0·17
7716·1	0·22

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
18739·1 lbs.	0·13 in.

Crushing Weight, 18959·5 lbs. (broke violently).

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
6613·8 lbs.	0·04 in.
7716·1	0·05
8818·4	0·30

No. 47.—Botanical name, *Laurus Chloroxylon.* Aboriginal and local name, COG-WOOD.

"The best for mill-framing, cog-wheels; enduring in water."
Specific gravity of specimen, 0·961.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	$1\frac{1}{2}$	1	6942·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·05
3306·9	0·10
4409·2	0·13
5511·5	0·21
6613·8	0·26

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
6613·8 lbs.	0·01 in.
8818·4	0·03
11023·0	0·05
Crushing Weight	12122·0 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.	6613·8 lbs.	0·19 in.
3306·9	0·05	7716·1	0·24
4409·2	0·09	8818·4	0·33
5511·5	0·15		

No. 48.—Botanical name, ———. Aboriginal and local name, SMALL LEAF.

Specific gravity of specimen, 1·169.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 1¾	1¾	1	7934·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·10 in.
2204·6	0·13
3306·9	0·17
4409·2	0·23
5511·5	0·28

THIRD EXPERIMENT for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
15432·2 lbs.	0·18 in.
Crushing Weight	15432·2 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·04 in.	6613·8 lbs.	0·46 in.
4409·2	0·07		

No. 49.—Botanical name, *Citrus aurantium*. Aboriginal and local name, WILD ORANGE.

"Used for framing, &c." Specific gravity of specimen, 0·908.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Train.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	—	—	—	—
2	1 5⅛	2	1	10141·1

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.		Transverse Strain.	Deflection.	
	Specimen 1.	Specimen 2.		Specimen 1.	Specimen 2.
3306·9 lbs.	0·03 in.		7164·9 lbs.		0·14 in.
4409·2	0·05		8818·4		0·21
5511·5	0·07		9220·7		0·29
6613·8	0·11				

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
4409·2 lbs.	0·02 in.	11023·0 lbs.	0·06 in.
6613·8	0·03	13227·6	0·08
8818·4	0·05		
Crushing Weight	13237·6 lbs.		

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·09 in.	6613·8 lbs.	0·39 in.
3306·9	0·14	7716·1	0·45
4409·2	0·19	8818·4	0·48
5511·5	0·31		

No. 50.—Botanical name, *Melicocca bijuga*. Aboriginal and local name, GYNIP.

"Originally imported from Surinam; grows commonly in the lowlands to a very large size."

Specific gravity of specimen, 0·934.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 1¾	2	1	6612·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·01 in.
2204·6	0·07
3306·9	0·10
4409·2	0·15
5511·5	0·20

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·01 in.
6613·8	0·03
7716·1	0·04
8818·4	0·07
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·06 in.	6613·8 lbs.	0·21 in.
3306·9	0·10	7716·1	0·22
4409·2	0·15	8818·4	0·47
5211·5	0·19		

No. 51.—Botanical name, *Cedrela odorata*. Aboriginal and local name, CEDAR.

"Rises with a straight stem 70 or 80 feet, and often from 3 to 5 feet diameter; much esteemed for cabinet-ware and wainscoting; it affords most durable planks and shingles, yields a clear and abundant gum, which is said to be fit for shoemakers' use."

Specific gravity of specimen, 0·576.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 3	2	1	195·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·10 in.
2204·6	0·26

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.	4409·2 lbs.	0·08 in.
3306·9	0·04	5511·5	0·13

Crushing Weight . . . . 6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·45 in.	6613·8 lbs.	0·53 in.
3306·9	0·48	7716·1	0·55
4409·2	0·50	8818·4	0·57
5511·5	0·51		

No. 52.—Botanical name, *Morus tinctoria.* Aboriginal and local name, FUSTIC.

"A well-known yellow dyewood; but the use of it as a dyewood is, we believe, much discontinued by the more splendid quercitron bark of America. The wood is admirably adapted for the felloes of carriage and cart wheels. Grown in Kingston."

Specific gravity of specimen, 0·966.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
	1 $2\frac{7}{8}$	2	1	8595·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·05 in.	6613·8 lbs.	0·17 in.
3306·9	0·08	7164·9	0·21
4409·2	0·10	7716·1	0·23
5511·5	0·13		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
12125·3 lbs.	0·06 in.
Crushing Weight	12125·3 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.
4409·2	0·09
6613·8	0·28
8818·4	0·39

No. 53.—Botanical name, *Xanthoxylon clava Herculis.* Aboriginal and local name, PRICKLE YELLOW.

"For furniture, flooring, inlaying, &c., very common. Said to afford a dye, and to possess medicinal properties."

Specific gravity of specimen, 0·691.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 3	2	1	5730·

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection. Specimen 1.
1102·3 lbs.	0·02 in.
2204·6	0·05
3306·9	0·08
4409·2	0·14
5511·5	0·24

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
4409·2 lbs.	0·03 in.	7716·1 lbs.	0·07 in.
5511·5	0·04	8818·4	0·09
6613·6	0·06		
Crushing Weight		8818·4 lbs.	

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·28 in.
3306·9	0·52
4409·2	0·59
6613·8	0·65
8818·4	0·66

No. 54.—Botanical name, *Guaiacum officinale.* Aboriginal or local name, LIGNUM VITÆ.

"A well-known hard wood, adapted for rulers, pestles, and mortars, the rollers or wheels of blocks and pullies, yielding the medicinal gum resin, Guaiacum. A decoction of the bark is in common use among the natives as a cure for rheumatism. The tree is very common on the south side of the island."

Specific gravity of specimen, 1·170.
Ditto, No. 2 ditto, 0·651.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions. Length.	Dimensions. Section.	Bearings between Supports.	Breaking Weight.
	Ft. In.	In. square.	Feet.	Lbs.
1	1 2⅞	2	1	5511·5
2	1 4½	2	1	5069·2

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection. Specimen 1.	Specimen 2.
2204·6 lbs.	0·01 in.	0·07 in.
3306·9	0·05	0·12
4409·2	0·08	0·21

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·01 in.
6613·8	0·02
8818·4	0·04
9920·7	0·05
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
4409·2 lbs.	0·01 in.
6613·8	0·02
7716·1	0·05
8818·4	0·06
9920·7	0·26

No. 55.—Botanical name, *Acacia arborea*. Aboriginal or local name, WILD TAMARIND.

Specific gravity of specimen, 0·750.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	1¼	1	3526·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·12 in.
3306·9	0·14

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·07 in.
6613·8	0·09
7716·1	0·11
Crushing Weight	8705·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·48 in.
4409·2	0·64
6613·8	0·66
8818·4	0·70

No. 56.—Botanical name, *Quassia excelsa*. Aboriginal or local name, BITTERWOOD.

Used for "lumber generally; never infested with insects."

Specific gravity of specimen, 0·555.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	3746·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·17 in.
3306·9	0·44

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·09 in.
4409·2	0·13
5511·5	0·19
Crushing Weight	5511·5 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·51 in.
4409·2	0·57
6613·8	0·60
8818·4	0·63

No. 57.—Botanical name, *Bignonia longissima*, or *Tecoma longissima*. Aboriginal and local name, FRENCH OAK.

"Grows large."
Specific gravity of specimen, 0·774.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
	1 4½	2	1	4408·0

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·02 in.
2204·6	0·14
3306·9	0·26
4409·2	0·44

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·01 in.
5511·5	0·04
6613·8	0·14
Crushing Weight	6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·33 in.	6613·8 lbs.	0·54 in.
3306·9	0·41	7716·1	0·58
4409·2	0·46	8818·4	0·61
5511·5	0·50		

No. 58.—Botanical name, *Citharexylum malano-cardium*. Aboriginal and local name, FIDDLEWOOD.

"Durable. Used for mill-framing, carriage wheels, &c. A most useful timber. Said to yield a beautiful yellow or orange colour for whitewashers' work."
Specific gravity of specimen, 0·707.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	5510·0

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2102·3 lbs.	0·03 in.
2204·6	0·10
3306·9	0·18
4409·2	0·27

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.
4409·2	0·04
5511·5	0·07
6613·8	0·16
Crushing Weight	6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·36 in.
4409·2	0·61
6613·8	0·67
8818·4	0·69

No. 59.—*Terminalia latifolia.* Aboriginal or local name, BROADLEAF.

"Used for boards, scantling, shingles, and staves. This tree is often called the 'Almond Tree,' from the almond-shaped nut it bears. The outer coat of this nut (about ¼ inch thick) is a soft, acrid, insipid fruit, of which bats, &c. are very fond, as they constantly carry them about from place to place. The shell is very thick, and the nut very small, possessing a pleasant nutty flavour; grows 60 feet before reaching main branches, and 12 or 16 feet in circumference."

Specific gravity of specimen, 0·771.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2	2	1	6061·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·09
3306·9	0·14
4409·2	0·22
5511·5	0·35

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·03 in.
6613·8	0·06
7716·1	0·09
Crushing Weight	7716·1 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·16 in.	6613·8 lbs.	0·55
3306·9	0·45	8818·4	0·60
4409·2	0·51		

No. 60.—Botanical name, *Brosopis juliflora.* Aboriginal and local name, CASHAW.

"Adapted for knees of boats and ship-building generally, but it does not stand the iron nails well. Yields an abundant gum, differing little, if at all, from gum arabic; also a useful fibre; a common tree; attains 30 or 40 feet in height, with 3 feet diameter; very hard, much twisted and crooked; sometimes split for shingles, but nail holes must be bored."

Specific gravity of specimen, 0·916.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
—	1 2¼	2	1	6391·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1
1102·3 lbs.	0·01 in.
2204·6	0·06
3306·9	0·09
4409·2	0·15
5511·5	0·20

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·14 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·07 in.
4409·2	0·25
6613·8	0·35
8818·4	0·44

No. 61.—Botanical name, *Achras sideroxylon.* Aboriginal name, NEESBERRY. Local name, BULLET TREE.

"A very lofty tree. Said to be called 'Bully' from its towering above other trees esteemed as one of the best timber trees." Specific gravity of specimen, 1·046.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 2½	2	1	9920·7

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·04 in.	7164·9 lbs.	0·14 in.
3306·9	0·07	7716·1	0·16
4409·2	0·09	8818·4	0·22
5511·5	0·11	9920·7	0·30
6613·8	0·13		

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
14329·9 lbs.	0·08 in.
Crushing Weight	14329·9 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·04 in.
4409·2	0·09
6613·8	0·13

No. 62.—Botanical name, *Podocarpus yacca.* Aboriginal and local name, YACCA.

"Grows freely in this island, at a moderate elevation from the sea level, and is used for ornamental cabinet purposes."

Specific gravity of specimen, 0·626.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 $2\frac{1}{2}$	2	1	2204·6

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·05 in.

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.
4409·2	0·04
5511·5	0·05
6613·8	0·10
Crushing Weight	6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·39 in.	5511·5 lbs.	0·52 in.
3306·9	0·45	6613·8	0·53
4409·2	0·50	8818·4	0·58

No. 63.—Botanical name, *Hibiscus tiliaceus.* Aboriginal and local name, BLUE MAHOE.

"Used for cart, carriage, and waggon bodies, inlaying, &c.; much used for furniture; yields strong fibre for cordage."

Specific gravity of specimen, 0·536.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 $5\frac{1}{2}$	2	1	4297·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·09 in.
2204·6	0·23
3306·9	0·40

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818·4 lbs.	0·11 in.
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·60 in.
4409·2	0·65
6613·8	0·68
8818·4	0·70

No. 64.—Botanical name, *Prunus Occidentalis.* Aboriginal and local name, PRUNE.

"The bark yields an excellent liquor." Specific gravity of specimen, 0·864.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 3	2	1	6613·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·05 in.
3306·9	0·09
4409·2	0·14
5511·5	0·20
6613·8	0·34

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·02 in.	8818·4 lbs.	0·05 in.
4409·2	0·03	9920·7	0·10
6613·8	0·04		

Crushing Weight . . . . . 9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·06 in.	6613·8 lbs.	0·41 in.
3306·9	0·18	7716·1	0·42
4409·2	0·28	8818·4	0·45
5511·5	0·38		

No. 65.—Botanical name, *Swietania Mahogany Var.* Aboriginal and local name, WILD MAHOGANY.

"Used for furniture, water-wheels, planking of vessels, &c. Its growth dependent on localities." Specific gravity of specimen, 0·921.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 3	2	1	7383·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·04 in.
3306·9	0·09
4409·2	0·12
5511·5	0·18
6613·8	0·23
7164·9	0·28

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·03 in.
6613·8	0·05
8818·4	0·07
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction

Strain applied.	Amount yielded.
2204·6 lbs.	0·10 in.
4409·2	0·52
6613·8	0·56
8818·4	0·58

No. 66.—Botanical name, *Bumelia salicifolia.* Aboriginal name, SAPOTA, and GALIMETA WOOD. Local name, WILLOW-LEAVED BASTARD BULLET TREE.

"From Fort George pen; extracted from the forest at six miles from the sea coast, and grew in a soil of mould, the substratum rock being porphyritic conglomerate and sandstone. Said to be good timber wood when not exposed to the weather."
Specific gravity of specimen, 0·902.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 5	2	1	6722·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·06
3306·9	0·09
4409·2	0·11
5511·5	0·14
6613·8	0·18

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·02 in.
6613·8	0·03
8818·4	0·05
11023·0	0·11
Crushing Weight	11023 0 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·11 in.
4409·2	0·30
6613·8	0·37
8818·4	0·42

No. 67.—Botanical name, *Hymenæa Courbaril.* Aboriginal and local name, LOCUST.

"Boards; house framing; hard and tough; supposed to have been imported. Form the roots exude that valuable substance called 'gum animi,' which is said to form an excellent varnish, superior to Chinese lacca. Grows on the plains and mountains round St. Catharine's." Specific gravity of specimen, 0·675.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 5¾	In. square. 2	Foot. 1	Lbs. 6061·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·08 in.
3306·9	0·14
4409·2	0·23
5511·5	0·40

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·03 in.
6613·8	0·05
7716·1	0·26
Crushing Weight	7716·1 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
2204·6 lbs.	0·38 in.	5511·5 lbs.	0·51
3306·9	0·41	6613·8	0·54
4409·2	0·45		

No. 68.—Botanical name, ——. Aboriginal and local name, BEECH.

Used for "house framing, of large growth." Specific gravity of specimen, 0·843.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 13¾	In. square. 2	Foot. 1	Lbs. 9038·8

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
2204·6 lbs.	0·02 in.	6613·8 lbs.	0·17 in.
3306·9	0·05	7164·9	0·21
4409·2	0·09	7716·1	0·27
5511·5	0·11	8818·4	0·45

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818·4 lbs.	0·08 in.
Crushing Weight	8818·4 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·13 in.
4409·2	0·31
5511·5	0·37
6613·8	0·41

No. 69.—Botanical name, *Andira inermis.* Local name, CABBAGE BARK TREE.

"Grows to a moderate height; bark used as a vermifuge; its effects are emetic drastic, purgative, and narcotic; yields a very tough and useful wood."

Specific gravity of specimen, 0·945.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 5¼	2	1	6722·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·05 in.
3306·9	0·08
4409·2	0·10
5511·5	0·15
6613·8	0·23

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
9920·7 lbs.	0·05 in.
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·08 in.
4409·2	0·34
6613·8	0·47
8818·4	0·52

No. 70.—Botanical name, ———. Aboriginal and local name, RED BULLY or BULLET TREE.

Specific gravity of specimen, 0·999.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 4	2	1	5510·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·06 in.
3306·9	0·09
4409·2	0·10
5511·5	0·18

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·01 in
4409·2	0·02
6613·8	0·05
8818·4	0·06
9920·7	0·16
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·08 in.
4409·2	0·19
6613·8	0·34
8818·4	0·43

No. 71.—Botanical name, *Tamarindus occidentalis.* Aboriginal and local name, TAMARIND.

"Large growth: thrives in lowland savannahs, but best in brick mould districts."
Specific gravity of specimen, 0·870.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
—	Ft. In. 1 4⅝	In. square. 2	Foot. 1	Lbs. 6722·2

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearings as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·05 in.
3306·9	0·09
4409·2	0·15
5511·5	0·20
6613·8	0·28

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
4409·2 lbs.	0·05 in.
6613·8	0·06
8818·4	0·09
Crushing Weight	9256·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·11 in.
4409·2	0·35
6613·8	0·41
8818·4	0·47

No. 72.—Botanical name, *Crescentia Cujete.* Local name, CALABAS.

"Grows common throughout the island, 20 feet and less high, wood light, tough, and pliant, fit for carriage building, &c. The fruit well adapted for many domestic and ornamental purposes."
Specific gravity of specimen, 0·557.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 5¼	In. square. 2	Foot. 1	Lbs. 4518·2

SECOND EXPERIMENT, for noting the Deflection.
Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·08
3306·9	0·11
4409·2	0·23

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·01 in.
4409·2	0·03
5511·5	0·18
Crushing Weight	5511·5 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.	Strain applied.	Amount yielded.
1102·3 lbs.	0·31 in.	5511·5 lbs.	0·54 in.
2204·6	0·33	6613·8	0·57
3306·9	0·43	7716·1	0·59
4409·2	0·50	8818·4	0·61

No. 73.—LIGNUM VITÆ. *See* No. 54, Specimen 2.

No. 74.—Botanical name, ———. Aboriginal and local name, YELLOW SANDERS.

Specific gravity of specimen, 0·859.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 4¾	In. square. 2	Foot. 1	Lbs. 9590·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·07
3306·9	0·12
4409·2	0·21

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
2204·6 lbs.	0·03 in.
4409·2	0·05
6613·8	0·10
Crushing Weight	6613·8 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·26 in.
4409·2	0·43
6613·8	0·49
8818·4	0·52

No. 75.—Botanical name, *Swietenia Mahogani.* Aboriginal and local name, GREEN MAHOGANY.

"For furniture, water wheels, planking of vessels, &c."

Specific gravity of specimen, 0·664.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 0 16¼	In. square. 2	Foot. 1	Lbs. 6061·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
2204·6 lbs.	0·07 in.
3306·9	0·16
4409·2	0·23
5511·5	0·45

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre

Strain applied.	Amount yielded.
2204·6 lbs.	0·04 in.
4409·2	0·07
6613·8	0·10
Crushing Weight	7716·1 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction

Strain applied.	Amount yielded.
2204·6 lbs.	0·30 in.
4409·2	0·43
6613·8	0·49
8818·4	0·52

No. 76.—Botanical name, *Piscidia Carthageniensis.* Aboriginal and local name, BLACK DOGWOOD OR BITCHWOOD.

"A mid-sized tree, grows mostly in the low lands, on dry calcareous hills. The bark, especially of the root, intoxicates fish. A tincture has been used as a hypnoptic, and has been highly recommended in cases of maniacal excitement. A most useful tree, lasts well in or out of water, and said to make excellent piles for wharves, &c."

Specific gravity of specimen, 0·930, water being 1·000.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
	Ft. In.	In. square.	Foot.	Lbs.
1	1 6¼		1	6061·0

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·03 in.
2204·6	0·08
3306·9	0·11
4409·2	0·23

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
11023·0 lbs.	0·13 in.
Crushing Weight	11023·0 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·07 in.
4409·2	0·17
6613·8	0·33
8818·4	0·70

No. 77.—Botanical name, *Citrus Aurantium.* Aboriginal and local name, SWEET ORANGE.

"Used for inlaying, &c., walking sticks. Very common; but thrives best in brick mould districts."
Specific gravity of specimen, 0·785.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 1 5¾	In. square. 2	Foot. 1	Lbs. 4628·4

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.
	Specimen 1.
1102·3 lbs.	0·04 in.
2204·6	0·10
3306·9	0·20
4409·2	0·38

No. 78.—Botanical name, *Piscidia Erythrina.* Aboriginal and local name, WHITE DOGWOOD.

"A mid-sized tree, growing mostly in the lowlands on dry calcareous hills. The bark, especially of the root, intoxicates fish."
Specific gravity of specimen, 0·943.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 0 17¾	In. square. 2	Foot. 1	Lbs. 9477·2

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection.	Transverse Strain.	Deflection.
	Specimen 1.		Specimen 1.
1102·3 lbs.	0·02 in.	6613·8 lbs.	0·23 in.
2204·6	0·06	7164·9	0·26
4409·2	0·12	7716·1	0·30
5511·5	0·16	8818·4	0·39

No. 79.—Botanical name, *Laurus Borbonia.* Aboriginal and local name, TIMBER SWEETWOOD.

"For boards, staves, and scantlings; large and abundant on the lower hills."
Specific gravity of specimen, 0·973.

FIRST EXPERIMENT, for ascertaining the Breaking Weight when submitted to a Transverse Strain.

No. of Specimen.	Dimensions.		Bearing between Supports.	Breaking Weight.
	Length.	Section.		
1	Ft. In. 17 ¾	In. square. 2	Foot. 1	Lbs. 9149·1

SECOND EXPERIMENT, for noting the Deflection.

Dimensions and Bearing as in First Experiment.

Transverse Strain.	Deflection. Specimen 1.	Tranverse Strain.	Deflection. Specimen 1.
2204·6 lbs.	0·04 in.	6613·8 lbs.	0·26 in.
3306·9	0·09	7164·9	0·30
4409·2	0·13	7716·1	0·33
5511·5	0·21	8818·4	0·48

THIRD EXPERIMENT, for ascertaining the Crushing Strain in the Direction of the Fibre.

Strain applied.	Amount yielded.
8818·4 lbs.	0·11 in.
9920·7	0·14
Crushing Weight	9920·7 lbs.

FOURTH EXPERIMENT, for ascertaining the Crushing Strain in a Transverse Direction.

Strain applied.	Amount yielded.
2204·6 lbs.	0·05 in.
4409·2	0·20
8818·4	0·62

TABLE I.

In the following Table the Woods are arranged in the Order of their Specific Gravity.

No. of Specimen.	Name of Wood.	Colony.	Specific Gravity, Distilled Water being 1·000.	No. of Specimen.	Name of Wood.	Colony.	Specific Gravity, Distilled Water being 1·000.
46	Black Heart Ebony.	Jamaica	1·123	15	Mahogany	New South Wales.	0·952
7	Box of Illawarra.	New South Wales.	1·170	69	Bastard Cabbage Bark.	Jamaica	0·945
54	Lignum Vitæ.	Jamaica	1·170	78	White Dogwood.	Ditto	0·943
48	Small Leaf	Ditto	1·169				
11	Bastard Box.	New South Wales.	1·115	21	Monkey Pot	British Guiana.	0·941
2	Mountain Ash	Ditto	1·110	50	Gynip	Jamaica	0·934
35	Kakaralli	Ditto	1·103	76	Black Dogwood.	Ditto	0·930
28	Sipiri or Greenheart.	British Guiana.	1·089	16	Grey Gum	New South Wales.	0·927
27	Sipiri or Greenheart.	Ditto	1·052	18	Mora	British Guiana.	0·922
61	Noesberry Bullet Tree.	Jamaica	1·046	65	Wild Mahogany.	Jamaica	0·921
34	Wallaba	British Guiana.	1·035	60	Cashaw	Ditto	0·916
25	Brown Ebony	Ditto	1·034	30	Ducaballi	British Guiana	0·910
5	Iron Bark	New South Wales.	1·032	49	Wild Orange	Jamaica	0·908
13	Rough-leaved Iron Bark.	Ditto	1·016	66	Bullet Tree (Bastard).	Ditto	0·902
4	Woolly Butt	Ditto	1·005	17	Cabacalli	British Guiana.	0·893
1	Water Gum	Ditto	1·001				
10	Letter Wood	British Guiana.	0·999	3	Black Butt	New South Wales.	0·891
70	Red Bully Tree.	Jamaica	0·999	32	Kaieeri-balli	British Guiana.	0·879
29	Cuamara or Tonka.	British Guiana.	0·987	71	Tamarind	Jamaica	0·870
43	Iron Wood	Jamaica	0·987	9	Stringy Bark.	New South Wales.	0·864
79	Sweet Wood	Ditto	0·973	12	Swamp Mahogany.	Ditto	0·864
8	True Box of Camden.	New South Wales.	0·970	64	Prune	Jamaica	0·864
52	Fustic	Jamaica	0·966	74	Yellow Sanders	Ditto	0·859
47	Cog Wood	New South Wales.	0·961	49	Wild Orange	Ditto	0·850
44	Satin Candlewood.	Jamaica	0·956	6	Blue Gum	New South Wales.	0·843
				68	Beech	Jamaica	0·842

TABLE I.—*continued.*

No. of Specimen.	Name of Wood.	Colony.	Specific Gravity, Distilled Water being 1·000.	No. of Specimen.	Name of Wood.	Colony.	Specific Gravity, Distilled Water being 1·000.
41	Sirabuliballi .	British Guiana.	0·838	42	Box-wood .	Jamaica .	0·690
				24	Purple Heart	British Guiana.	0·679
33	Buhuradda .	Ditto .	0·814				
40	Buckati .	Ditto .	0·812	67	Locust Tree .	Jamaica .	0·675
20	Houbaballi .	Ditto .	0·810	45	Lancewood .	Ditto .	0·675
26	Baracara .	Ditto .	0·807	75	Green Mahogany.	Ditto .	0·664
77	Sweet Orange	Jamaica .	0·785				
57	French Oak .	Ditto .	0·774	10	Forest Swamp Oak.	New South Wales.	0·661
38	White Cedar	British Guiana.	0·771				
				74	Yellow Sanders	Jamaica .	0·651
59	Broad Leaf .	Jamaica .	0·771	22	Bartaballi .	British Guiana.	0·640
55	Wild Tamarind.	Ditto .	0·750				
				62	Yacca . .	Jamaica .	0·626
14	Hickory .	New South Wales.	0·748	37	Crabwood .	British Guiana.	0·603
39	Locust Tree .	British Guiana.	0·707	51	Cedar . .	Jamaica .	0·576
				72	Calabash .	Ditto .	0·557
58	Fiddle Wood	Jamaica .	0·707	56	Bitterwood .	Ditto .	0·555
31	Cartan . .	British Guiana.	0·703	63	Silverballi .	British Guiana.	0·546
53	Prickle Yellow	Jamaica .	0·691	63	Blue Mahoe	Jamaica .	0·536

TABLE II.—Breaking Weights.

In this Table the Woods are arranged according to their Value in the First Series of Experiments.

No. of Specimen.	Name of Wood.	Colony.	Breaking Weight reduced to 12 in. by 2 in. sq.	Value of S. in lbs.	Remarks.
			Lbs.		
43	Iron Wood . .	Jamaica . . .	14991·2	5624·0	
7	Box of Illawarra .	New South Wales .	13831·6	5186·6	
46	Black Heart Ebony .	Jamaica . . .	13580·3	5094·4	
48	Small Leaf . .	Ditto . . .	12698·6	4761·9	
44	Satin Candlewood .	Ditto . . .	12235·5	4587·7	
27	Sipiri or Greenheart .	British Guiana . .	12215·6	4580·0	Yellow variety.
25	Wamara or Brown Ebony.	Ditto . . .	12125·3	4546·0	
23	Wild Mammee . .	Ditto . . .	11640·2	4365·1	
11	Bastard Box . .	New South Wales .	11450·6	4294·5	
19	Letter Wood . .	British Guiana . .	11256·6	4221·8	
5	Iron Bark . . .	New South Wales .	10870·8	4068·0	
21	Monkey Pot . .	British Guiana . .	10692·3	4009·0	
26	Sipiri or Greenheart .	Ditto . . .	10471·8	3926·3	Black variety.
29	Cuamara or Tonka .	Ditto . . .	10471·8	3926·3	
49	Wild Orange . .	Jamaica . . .	10141·1	3802·9	From Metcalf Parish.
13	Broad-leaf Iron Bark	New South Wales .	10004·4	3752·2	
41	Sirabuliballi . .	British Guiana . .	9920·7	3719·1	
61	Neesberry Bullet Tree	Jamaica . . .	9920·7	3719·1	
2	Mountain Ash . .	New South Wales .	9863·3	3699·3	
18	Mora	British Guiana . .	9700·2	3637·5	
35	Kakaralli . . .	New South Wales .	9590·0	3596·0	
74	Yellow Sanders . .	Jamaica . . .	9590·0	3596·0	
78	White Dogwood .	Ditto . . .	9479·7	3553·8	
33	Buhuradda . .	British Guiana .	9479·7	3553·8	
30	Ducaballi . . .	Ditto . . .	9369·5	3511·9	
79	Sweet Wood . .	Jamaica . . .	9149·1	3430·3	
68	Beech . . .	Ditto . . .	9038·8	3389·0	

TABLE II.—*continued.*

No. of Specimen.	Name of Wood.	Colony.	Breaking Weight reduced to 12 in. by 2 in. sq.	Value of S. in lbs.	Remarks.
			Lbs.		
15	Mahogany	New South Wales	8994·7	3378·0	
3	Black Butt	Ditto	8741·2	3278·2	
52	Fustic	Jamaica	8597·9	3223·1	
47	Cog Wood	Ditto	8542·8	3205·4	
26	Baracara	British Guiana	8499·7	3189·2	
22	Bartaballi	Ditto	8465·6	3174·6	
12	Swamp Mahogany	New South Wales	8281·6	3101·8	
16	Grey Gum	Ditto	7828·5	2936·5	
14	Hickory	Ditto	7795·4	2923·3	
1	Water Gum	Ditto	7760·1	2910·0	
40	Buckati	British Guiana	7716·1	2892·4	
45	Lance Wood	Jamaica	7716·1	2892·4	
65	Wild Mahogany	Ditto	7385·4	2768·9	
17	Cabacalli	British Guiana	7167·1	2687·4	
38	White Cedar	Ditto	7167·1	2687·4	
6	Blue Gum	New South Wales	7167·1	2687·4	
69	Bastard Cabbage Bark	Jamaica	6724·0	2519·8	
71	Tamarind	Ditto	6724·0	2519·8	
66	Bastard Bullet Tree	Ditto	6724·0	2519·8	
64	Prune	Ditto	6613·8	2480·1	
50	Gynip	Ditto	6613·8	2480·1	
24	Purple Heart	British Guiana	6393·3	2403·0	
60	Cashaw	Jamaica	6393·3	2403·0	
32	Kaieeri-balli	British Guiana	6393·3	2403·0	
4	Woolly Butt	New South Wales	6272·0	2352·3	
10	Forest Swamp Oak	Ditto	6214·6	2330·2	
39	Locust Tree	British Guiana	6172·9	2314·8	
59	Broad Leaf	Jamaica	6062·7	2272·9	
76	Black Dogwood	Ditto	6062·7	2272·9	
67	Locust Tree	Ditto	6062·7	2272·9	
75	Green Mahogany	Ditto	6062·7	2272·9	
9	Stringy Bark	New South Wales	5795·9	2173·7	
53	Prickle Yellow	Jamaica	5731·9	2149·4	
55	Wild Tamarind	Ditto	5643·7	2116·4	
58	Fiddle Wood	Ditto	5511·5	2065·7	
42	Box Wood	Ditto	5511·5	2065·7	
34	Wallaba	British Guiana	5511·5	2065·7	
37	Crabwood	Ditto	5511·5	2065·7	
54	Lignum Vitæ	Jamaica	5511·5	2065·7	
70	Red Bully Tree	Ditto	5511·5	2065·7	
8	True Box of Camden	New South Wales	5443·1	2041·4	
31	Cartan	British Guiana	4960·3	1858·4	
20	Houballi	Ditto	4737·7	1776·9	
77	Sweet Orange	Jamaica	4629·7	1735·0	
72	Calabash	Ditto	4518·2	1694·0	
49	Wild Orange	Ditto	4409·2	1653·4	From St. Catherine's Parish.
57	French Oak	Ditto	4409·2	1653·4	
36	Silverballi	British Guiana	4299·0	1611·5	
63	Blue Mahoe	Jamaica	4299·0	1611·5	
56	Bitter Wood	Ditto	3747·8	1404·3	
51	Cedar	Ditto	3196·7	1199·3	
62	Yacca	Ditto	2204·6	826·7	

TABLE III.—Crushing Strains.

In this Table the Woods are arranged according to their Value in the Third Series of Experiments.

No. of Specimen.	Name of Wood.	Colony.	Crushing Weight applied in Direction of Fibre. Dimensions, one inch cube.
			Lbs.
46	Black Heart Ebony.	Jamaica .	18959·5
43	Iron Wood or Red Wood.	Ditto .	17636·8
28	Sipiri Bibiru, or Greenheart.*	British Guiana.	15433·2
48	Small Leaf .	British Guiana.	15432·2
61	Neesberry Bullet Tree.	Ditto .	14329·9
19	Letter Wood or Snake Wood.	Ditto .	14105·6
23	Wild Mammee	Ditto .	12237·6
20	Ducaballi .	Ditto .	13227·6
13	Rough-leaved, Rough-barked Iron Bark.	New South Wales.	13227·6
35	Kakaralli .	British Guiana.	13227·6
49	Wild Orange †	Jamaica .	13227·6
25	Wamara or Brown Ebony.	British Guiana.	12566·2
44	Satin Candlewood.	Jamaica .	12562·8
33	Buhuradda .	British Guiana.	12125·3
21	Monkey Pot .	Ditto .	12125·3
47	Cog Wood .	Jamaica .	12122·0
27	Sipiri or Greenheart.‡	British Guiana.	12125·3
52	Fustic . .	Jamaica .	12125·3
29	Cuamara or Tonka.	British Guiana.	11463·9
76	Black Dogwood	Jamaica .	11023·0
66	Willow-leaved Bastard Bullet Tree.	Ditto .	11023·0
1	Water Gum .	New South Wales.	11020·0
3	Black Butt .	Ditto .	11020·0
2	Mountain Ash	Ditto .	11020·0
38	White Cedar .	British Guiana.	9920·7
40	Buckati .	Ditto .	9920·7
41	Sirabulibalii .	Ditto .	9920·7
79	Sweet Wood .	Jamaica .	9920·7
54	Lignum Vitæ	Ditto .	9920·7
5	Iron Bark .	New South Wales.	9920·7
60	Cashaw .	Jamaica .	9920·7
64	Prune . .	Ditto .	9920·7
69	Bastard Cabbage Bark Tree.	Ditto .	9920·7
70	Red Bully Tree.	Ditto .	9920·7
77	Box of Illawarra.	New South Wales.	9920·7
16	Grey Gum .	Ditto .	9920·7
24	Purple heart	British Guiana.	9920·7
15	Mahogany .	New South Wales.	9920·7
17	Cabacalli .	British Guiana.	9920·7
18	Mora .	Ditto .	9920·7
31	Cartan .	British Guiana.	9920 7
11	Bastard Box	New South Wales.	9700·2
71	Tamarind .	Jamaica .	9256·3
8	True Box of Camden.	New South Wales.	8818·0
6	Blue Gum of Camden.	Ditto .	8818·4
12	Swamp Mahogany.	Ditto .	8818·4
9	Stringy Bark, Camden.	Ditto .	8818·4
22	Bartaballi .	British Guiana.	8818·4
26	Barracara .	Ditto .	8818·4
32	Kaieeri-Balli	Ditto .	8818·4
39	Simeri or Locust Tree.	Ditto .	8818·4
37	Crab Wood .	Ditto .	8818·4
42	Box Wood .	Jamaica .	8818·4
50	Gynip .	Ditto .	8818·4
53	Prickle Yellow.	Ditto .	8818·4
68	Beech .	Ditto .	8818·4
63	Blue Mahoe .	Ditto .	8818·4
65	Wild Mahogany.	Ditto .	8818·4
55	Wild Tamarind.	Ditto .	8705·8
36	Silverballi .	British Guiana.	7716·1
75	Green Mahogany.	Jamaica .	7716·1
67	Locust .	Ditto .	7716·1
59	Broad Leaf .	Ditto .	7716·1
4	Woolly Butt .	New South Wales.	7052·8
14	Hickory .	Ditto .	6613·8
34	Wallaba .	British Guiana.	6613·8
45	Lance Wood .	Jamaica .	6613·8
51	Cedar .	Ditto .	6613·8
57	French Oak .	Ditto .	6613·8
58	Fiddle Wood	Ditto .	6613·8
62	Yacca.	Ditto .	6613·8
74	Yellow Sanders.	Ditto .	5511·5
72	Calabash .	New South Wales.	5511·5
10	Forest Swamp Oak.	British Guiana.	5511·5
20	Houbaballi .	Jamaica .	5511·5
56	Bitter Wood .		

* Black variety. † From Metcalfe Parish. ‡ Yellow variety.

TABLE IV.

In this Table the Woods are placed according to their Value in the Fourth Series of Experiments.

No. of Specimen.	Name of Wood.	Colony.	Specimens, 1 in. square. Decimals of an inch.	No. of Specimen.	Name of Wood.	Colony.	Specimens, 1 in square. Decimals of an inch.
54	Lignum Vitæ	Jamaica .	0·01	31	Cartan .	British Guiana.	0·35
43	Iron Wood or Red Wood.	Ditto .	0·02	10	Forest Swamp Oak.	New South Wales.	0·35
46	Black Heart Ebony.	Ditto .	0·02	45	Lance Wood .	Jamaica .	0·37
29	Cuamara or Tonka.	British Guiana.	0·06	39	Simeri or Locust Tree.	British Guiana.	0·37
48	Small Leaf .	Jamaica .	0·07	31	Sirabuliballi .	Ditto .	0·40
27	Sipiri or Greenheart.	British Guiana.	0·08	26	Baracara .	Ditto .	0·42
30	Ducaballi .	Ditto .	0·09	74	Yellow Sanders.	Jamaica .	0·43
47	Cog Wood .	Jamaica .	0·09	75	Green Mahogany	Ditto .	0·43
61	Neesberry Bullet Tree.	Ditto .	0·09	16	Grey Gum .	New South Wales.	0·44
52	Fustic .	Ditto .	0·09	67	Locust . .	Jamaica .	0·45
24	Purple Heart	British Guiana.	0·10	23	Wild Mammee	British Guiana.	0·45
19	Letter Wood or Snake Wood.	Ditto .	0·10	57	French Oak .	Jamaica .	0·46
2	Mountain Ash	New South Wales.	0·12	37	Crab Wood .	British Guiana.	0·46
25	Wamara or Brown Ebony.	British Guiana.	0·11	22	Bartaballi .	Ditto .	0·47
44	Satin Candlewood.	Jamaica .	0·11	14	Hickory .	New South Wales.	0·47
50	Gynip . .	Ditto .	0·15	8	True Box of Camden.	Ditto .	0·50
76	Black Dogwood.	Ditto .	0·17	51	Cedar . .	Jamaica .	0·50
1	Water Gum .	New South Wales.	0·18	72	Calabash .	Ditto .	0·50
70	Red Bully Tree	Jamaica .	0·19	62	Yacca . .	Ditto .	0·50
18	Mora . .	British Guiana.	0·19	38	White Cedar .	British Guiana.	0·50
49	Wild Orange	Jamaica .	0·19	59	Broad Leaf .	Jamaica .	0·51
79	Sweet Wood .	Ditto .	0·20	20	Houbaballi .	British Guiana.	0·51
35	Kakaralli .	British Guiana.	0·20	65	Wild Mahogany	Jamaica .	0·52
4	Woolly Butt .	New South Wales.	0·21	5	Iron Bark .	New South Wales.	0·52
60	Cashaw .	Jamaica .	0·25	9	Stringy Bark of Camden.	Ditto .	0·52
17	Cabacalli .	British Guiana.	0·26	36	Siruballi .	British Guiana.	0·56
6	Blue Gum of Camden.	New South Wales.	0·26	33	Buhuradda .	Ditto .	0·56
42	Box Wood .	Jamaica .	0·28	3	Black Butt .	New South Wales.	0·56
64	Prune .	Ditto .	0·28	56	Bitterwood .	Jamaica .	0·57
32	Kaieeri-balli .	British Guiana.	0·28	13	Rough-leaved, Rough-barked Iron Bark.	Ditto .	0·57
66	Willow-leaved Bastard Bullet Tree.	Jamaica .	0·30	21	Monkey Pot .	British Guiana.	0·59
68	Beech .	Ditto .	0·31	53	Prickle Yellow	Jamaica .	0·59
40	Buckati .	British Guiana.	0·33	58	Fiddlewood .	Ditto .	0·61
15	Mahogany .	New South Wales.	0·33	63	Blue Mahoe .	Ditto .	0·64
69	Bastard Cabbage Bark Tree.	Jamaica .	0·34	55	Wild Tamarind.	Ditto .	0·65
71	Tamarind .	Ditto .	0·35	7	Box of Illawarra.*	New South Wales.	—
				11	Bastard Box †	Ditto .	—
				34	Wallaba ‡ .	British Guiana.	—

* Fracture at 2000. † Fracture at 1800. ‡ 40 at 1500.

TABLE V.

Th Ratio of the Breaking Weight to the Specific Gravity of each Wood.

No. of Specimen.	Name of Wood.	Breaking Weight divided by Specific Gravity.	No. of Specimen.	Name of Wood.	Breaking Weight divided by Specific Gravity.
43	Iron Wood	15·188	2	Mountain Ash	8·885
22	Bartaballi	13·228	59	Locust Tree.	8·731
44	Satin Candle Wood	12·782	6	Blue Gum	8·501
41	Sirabuliballi	11·838	16	Grey Gum	8·444
7	Box of Illawarra	11·821	55	Prickle Yellow	8·290
25	Brown Ebony	11·726	54	Lignum Vitæ	8·210
33	Buhuradda	11·645	72	Calabash	8·111
27	Sipiri or Greenheart	11·611	17	Cabacalli	8·026
45	Lance Wood	11·431	63	Blue Mahoe	8·020
46	Black Heart Ebony	11·383	65	Wild Mahogany	8·019
21	Monkey Pot	11·362	42	Box Wood	7·987
49	Wild Orange	11·278	36	Silverballi	7·873
19	Letter Wood	11·267	59	Broad Leaf	7·863
48	Small Leaf	10·862	58	Fiddle Wood	7·794
68	Beech	10·722	74	Yellow Sanders	7·790
29	Cuamara, or Tonka	10·609	1	Water Gum	7·752
5	Iron Bark	10·533	71	Tamarind	7·728
26	Baracara	10·532	64	Prune	7·654
18	Mora	10·520	55	Wild Tamarind	7·524
14	Hickory	10·421	66	Bastard Bullet Tree	6·454
30	Ducaballi	10·296	32	Kaieeri-balli	7·348
11	Bastard Box	10·269	69	Bastard Cabbage Bark	7·115
78	White Dogwood	10·052	50	Gynip	7·081
13	Rough-leaved Iron Bark	9·846	31	Cartan	7·055
3	Black Butt	9·810	60	Cashaw	6·979
28	Sipiri, or Greenheart	9·615	56	Bitter Wood	6·752
12	Swamp Mahogany	9·585	9	Stringy Bark	6·708
40	Buckati	9·502	76	Black Dogwood	6·519
61	Bullet Tree	9·483	4	Woolly Butt	6·240
15	Mahogany	9·448	77	Sweet Orange	5·904
24	Purple Heart	9·415	20	Houbaballi	5·849
79	Timber Sweet Wood	9·402	57	French Oak	5·694
10	Forest Swamp Oak	9·401	8	True Box of Camden	5·611
38	White Cedar	9·295	51	Cedar	5·549
37	Crab Wood	9·140	70	Red Bully Tree	5·518
75	Green Mahogany	9·124	34	Wallaba	5·325
67	Locust	8·981	49	Wild Orange	5·010
52	Fustic	8·900	62	Yacca	3·521
47	Cog Wood	8·889			

No. 73. Botanical name, Guiacum officinale, *see* No. 54, Specimen 2.

INDEX of WOODS tested in foregoing EXPERIMENTS.

No. of Specimen.	Name of Wood.	Colony.	No. of Specimen.	Name of Wood.	Colony.
1	Water Gum	New South Wales.	16	Grey Gum	New South Wales
2	Mountain Ash	Ditto.	17	Cabacalli	British Guiana.
3	Black Butt	Ditto.	18	Mora	Ditto.
4	Woolly Butt	Ditto.	19	Letter Wood	Ditto.
5	Iron Bark	Ditto.	20	Houbaballi	Ditto.
6	Blue Gum	Ditto.	21	Monkey Pot	Ditto.
7	Box of Illawarra	Ditto.	22	Bartaballi	Ditto.
8	True Box of Camden	Ditto.	23	Wild Mammee	Ditto.
9	Stringy Bark	Ditto.	24	Purple Heart	Ditto.
10	Forest Swamp Oak	Ditto.	25	Brown Ebony	Ditto.
11	Bastard Box	Ditto.	26	Baracaria	Ditto.
12	Swamp Mahogany	Ditto.	27	Sipiri, or Greenheart, Yellow.	Ditto.
13	Rough-leaved Iron Bark.	Ditto.	28	Sipiri, or Greenheart, Black.	Ditto.
14	Hickory	Ditto.	29	Cuamara or Tonka	Ditto.
15	Mahogany	Ditto.			

No. of Specimen.	Name of Wood.	Colony.	No. of Specimen.	Name of Wood.	Colony.
30	Ducaballi	British Guiana.	55	Wild Tamarind	Jamaica.
31	Cartan	Ditto.	56	Bitterwood	Ditto.
32	Kaieeri-balli	Ditto.	57	French Oak	Ditto.
33	Buhuradda	Ditto.	58	Fiddle Wood	Ditto.
34	Wallaba	Ditto.	59	Broad Leaf	Ditto.
35	Kakaralli	Ditto.	60	Cashaw	Ditto.
36	Silverballi	Ditto.	61	Bullet Tree	Ditto.
37	Crab Wood	Ditto.	62	Yacca	Ditto.
38	White Cedar	Ditto.	63	Blue Mahoe	Ditto.
39	Locust Tree	Ditto.	64	Prune	Ditto.
40	Buckati	Ditto.	65	Wild Mahogany	Ditto.
41	Sirahuliballi	Ditto.	66	Bastard Bullet Tree	Ditto.
42	Box Wood	Jamaica.	67	Locust	Ditto.
43	Iron Wood	Ditto.	68	Beech	Ditto.
44	Satin Candlewood	Ditto.	69	Cabbage Bark Tree	Ditto.
45	Lancewood	Ditto.	70	Red Bully Tree	Ditto.
46	Black Heart Ebony	Ditto.	71	Tamarind	Ditto.
47	Cog Wood	Ditto.	72	Calabash	Ditto.
48	Small Leaf	Ditto.	73	Lignum Vitæ	Ditto.
49	Wild Orange	Ditto.	74	Yellow Sanders	Ditto.
50	Gynip	Ditto.	75	Mahogany	Ditto.
51	Cedar	Ditto.	76	Black Dogwood	Ditto.
52	Fustic	Ditto.	77	Sweet Orange	Ditto.
53	Prickle Yellow	Ditto.	78	White Dogwood	Ditto.
54	Lignum Vitæ	Ditto.	79	Timber Sweetwood	Ditto.

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Alphabetical List of Exhibitors in the Museum of Construction and Building Materials.

NOTE.—The letter after each number refers to the particular section of the Catalogue. These *sections* are designated by the letters A to N inclusive; and the letter Z.

Adamantine Brick and Tile Works, Little Bytham Station, Great Northern Railway, Stamford. Nos. 32 E, 87 E, 104 E, 3 F, 62 F, 2 H, 8 H.

Adams, Bridges, 1, Adam Street, Adelphi, Strand, W.C. No. 95 F.

Alford and Sons, J., Salisbury, and 53 Hindon Street, Pimlico, S.W. No. 28 A.

Ambrose, John, Copford, near Colchester, Essex. Nos. 28 E, 29 E, 80 F.

Amies and Barford, Queen Street Iron Works, Peterborough. No. 93 M.

Andrews, *see* Tye and Andrews.

Archer, Capt. L. No. 105 M.

Architectural Museum, South Kensington. Nos. 30A, 31A, 5 M, 6 M, 7 M, 8 M, 9 M, 10 M, 11 M, 13 M.

Architectural Pottery Company, Poole, Dorset, and 36, Parliament Street, Westminster, S.W. Nos. 36 E, 49 E, 50 E, 69 E, 70 E, 71 E, 96 F, 97 F, 111 F.

Arrowsmith, T., 80, New Bond Street, W. No. 10 K.

Armani and Co., 6, Guildhall Chambers, Basinghall Street, E.C. Nos. 4 I.

Arnold, Joseph, The Leys, Tamworth. Nos. 65 E, 66 E, 67 E, 68 E, 89 E.

Art Museum, Science and Art Department, South Kensington, Nos. 33 A, 50 A, 55 G, 56 G, 58 G, 59 G, 60 G, 61 G, 62 G, 85 G, 86 G, 88 G, 90 G, 65 M, 66 M, 67 M, 68 M, 69 M, 70 M, 71 M, 72 M, 73 M, 74 M, 75 M, 76 M, 77 M, 78 M, 79 M, 80 M.

Automeyer, M., Paris. No. 12 I.

Ardsley Oaks Quarry, Barnsley, Yorkshire. No. 22 A.

Austria, from. No. 74 F.

Aylesford Pottery Company, The; Aylesford, Kent: and Aylesford Pottery Wharf, Belvedere Road, Lambeth, S. Nos. 39 E, 41 E, 42 E.

Azé, Theodore, 42, Bookham Street, Hoxton, N. No. 55 A.

Baillie, T., and Co, 118 Wardour Street, Oxford Street, W.C. Nos. 31 L, 32 L.

Baily, W., and Sons, 71 Gracechurch Street, City, E.C., No. 41 J.

Bangor Slate Company, Brynhafod-y-Wern Quarries, Bangor, Nos. 4 C, 5 C, 6 C.

Bank Park Pyropolite Works, Preston Pans. Nos. 26 G, 40 G, 41 G.

Baines, Capt. Edward, 62 Lincoln's Inn Fields, W.C. No. 88 M.

Bartlett, Brothers, and Co., Devonshire Wharf, Camden Town. No. 56 A.

Bastida and Co., 48, Hart Street, Bloomsbury, W.C. *See* Contreras, Don Rafael.

Batten, W., Barton Hill House, Shaftesbury. Nos. 16 K, 89 M.

Beale, Chas., 14, Moorgate Street, E.C. Nos. 7a B, 50 H.

Beart, J., Great Northern Wharf, Goods Depôt, King's Cross, N. No. 33 E.

Belgium, Marble from. No. 16 B.

Bell, J., Sc., 5, Douro Place, Kensington, S.W. No. 20 J.

Bellman and Ivey, 14, Buckingham Street, Fitzroy Square, W. Nos. 35 B, 36 B, 37 B.

Bing, Edward, Builder, 21, Effingham Street, Ramsgate. Nos. 28 M, 29 M.

Black, J., C.E., 20, Great George Street, Westminster, S.W. No. 19 M.

Blanchard, M. H., & Co., Terra Cotta Works, 74, Blackfriars Road, S. Nos. 23 G, 24 G, 32 G, 33 G, 75 G, 96 G.

Blashfield, J. M., Stamford, Lincolnshire, and 377, Oxford Street, W.C. Nos. 3 D, 5 D, 29 D, 147 E, 10 G, 11 G, 14 G, 15 G, 16 G, 17 G, 18 G, 19 G, 20 G, 21 G, 22 G, 27 G, 28 G, 29 G, 30 G, 31 G, 76 G, 77 G, 78 G, 79 G, 81 G, 97 G, 98 G, 99 G, 100 G, 101 G.

Bleuze, M., Paris. No. 22 J.

Blizard, John, Cheltenham. No. 7 K.

Bodmer, Brothers, 2, Thavies Inn, Holborn, E.C., and Newport, Monmouth. No. 21 E.

Borie, Paul M. (Paris). No. 45 E.

Bourne Valley Pottery Company, Poole, Dorset; and Goods Depôt, Nine Elms Station, Vauxhall, S. No. 19 H.

Bourne, Joseph, Derby Pottery, Derby. No. 67 G.

Bowden, Mark, and Co., Bristol; J. White and Co., Glass Works, Nailsea, Bristol. Nos. 29 L, 35 L.

Bowen, J., Bridgewater. No. 22 D.

Boyd, D. O., 9, Conduit Street, Regent Street, W. No. 59 L.

Bradshaw and Sansom, Mansfield, Notts. Nos. 48 J, 49 J.

Bristol, Stone from. No. 27 A.

Broughton, Henry, *see* Mineral Rock and Seyssel Asphalte Company. Nos. 5 I, 6 I., &c.

Brown, John, Architect, Upper King Street, Norwich. Nos. 40 M, 41 M, 53 M.

Brown, Robert, Tile Works, Surbiton Hill, Kingston, Surrey. Nos. 140 E, 141 E, 9 F, 10 F, 11 F, 19 F, 20 F, 28 F, 29 F, 30 F, 31 F, 32 F, 44 F, 45 F, 46 F, 47 F, 48 F, 49 F, 65 F, 66 F, 67 F, 68 F, 72 F, 73 F, 89 F.

Brucciani, D., 5, Little Russell Street, Covent Garden, W.C. Nos. 21 D, 33 D.

Bulletti, A. L., 78, Grey Street, Newcastle-on-Tyne. No. 9 K.

Bunnett and Co., Engineers, Deptford, S. Nos. 46 M, 57 Z.

Burdin, M., Lyons, France. No. 76 F.

Burgoyne, Sir J. F., Bart., G.C.B., Royal Engineers, War Office, Pall Mall, S.W. Nos. 21 K, 87 M.

Burn, G. A., Architect, 9 B, New Broad Street, E.C. No. 50 M.

Burt and Potts, 38, York Street, Westminster, S.W. No. 3 J.

Cappe, M., 2, Quai de Billy, Paris. No. 14 B.

Carved Brickwork, *see* W. Hurst. No. 64 E.

Cassels, Alexander, Edinburgh. No. 6 A.

Cawte, W., Furze Hall Brick Yard, Fareham, Hants. Nos. 11 E, 78 E, 105 E, 118 E, 92 F.

Chabert, M., St. Just des Marais, France. No. 106 F.

Chaudet, M., 6 and 8, Avenue Des Triomphes, Paris. No. 46 E.
China, from. Nos. 34 A, 50 A, 21 B, 58 G, 59 G, 60 G, 61 G, 62 G.
Clark and Co., 15, Gate Street, Lincoln's Inn, W.C. No. 44 M.
Clarke, H. Pickering, Esq., Trewern House, Spring Grove, Isleworth, S.W. No. 18 M.
Clark and Hunt, Wholesale Ironmongers, 159, Shoreditch, E.C. No. 50 J.
Clayton, Henry, and Co., Atlas Works, Dorset Square, Regent's Park. No. 19 E.
Cliff, Joseph, and Son, Wortley, near Leeds; and Goods Depôt, King's Cross, N. Nos. 37 G, 23 H, 27 H, 42 H, 48 H.
Cole, Henry, Esq., C.B., Science and Art Department, South Kensington. Nos. 18 B, 19 B, 28 B, 29 B.
Colin, M., Epinal, France. No. 13 B.
Colman, W., Swanton Novers, Norfolk. No. 37 F.
Colonesse, F. and G., Naples. Nos. 134 F, 88 G.
Contreras, Don Rafael, Granada. No. 90 M.
Coombes, H. G., C.E., 17, Union Street, Borough, S.E. No. 48 M.
Cooke, W., C.E., 54, Charing Cross, S.W. No. 32 M.
Cosmopolitan Glass Company, 296, Oxford Street, W. Nos. 1 L, 2 L, 4 L, 7 L, 9 L, 11 L, 13 L, 15 L, 17 L, 19 L, 22 L, 25 L, 37 L, 39 L, 41 L, 44 L.
Couchman, J. W., C.E., Tottenham Green. No. 21 M.
Courtois, M., 148, Rue St. Lazare, Paris. No. 75 F.
Cowen and Co., Blaydon Burn, Newcastle-upon-Tyne. Nos. 98 E, 109 E, 112 E.
Creuzot, M., Paris. Nos. 23 J, 24 J, 28 J, 29 J.
Crook, Josiah, 73, Coleman Street, City, E.C. No. 19 J.
Cross, Samuel, No. 1 K.
Cubitt, Lewis, Esq., C.E., 52, Bedford Square, W. Nos. 1 M, 2 M, 52 Z.
Cundy, Samuel. No. 22 B.

Dalton, W. T., and Son, Ratcliffe Cross, E.C., Nos. 95 M, 96 M.
Damon, Robert, Weymouth. No. 27 B.
Daniell, W., Truro, Cornwall. No. 62 M.
Dennett, C. C. and A., Nottingham. Nos. 31 D, 47 M.
Derbyshire Marbles. No. 3 B.
De Sachy, M., 62½, Berwick Street, Soho, W. Nos. 34 D, 35 D.
Devey, George, C.E., 16, Great Marlborough Street, W. No. 60 M.
Devonshire Marbles. No. 2 B.
Doulton, Henry, and Co., Potteries, High Street, Lambeth, S. Nos. 39 G, 4 H, 22 H, 24 H, 40 H, 41 H, 43 H, 46 H, 47 H.

Earnshaw and Graves, Masborough Pottery, Rotherham, Yorkshire. No. 132 F.
Eastwood, John and William, Belvedere Road, Lambeth, S. Nos. 1 E, 4 E, 5 E, 10 E, 14 E, 24 E, 48 E, 54 E, 55 E, 75 E, 82 E, 83 E, 94 E, 145 E, 12 F, 13 F, 17 F, 18 F, 26 F, 27 F, 50 F, 51 F, 52 F, 53 F, 87 F.
Edwards and Son, Stove Makers, 49, Great Marlborough Street, Oxford Street, W. Nos. 126 E, 127 E, 51 M.
Elkin, W. H., 27, Belvedere Road, Lambeth, S. No. 25 M.
Elliott, J., Architect, 270, High Holborn, London, E.C. No. 38 E.
Elliott, L., and Sons, Dale Hall Potteries, Stafford. No. 151 E.

Elsley, George, 15, North Street, Fulham Road, W.C. No. 16 M.
Enniskillen, Clay from. No. 2 F.
Evelyn, ——, Brick and Tile Works, Wotton, Dorking, Surrey. No. 53a F.

Farmer, W., 4, Mead Place, Westminster Road, S. No. 3 A.
Faulkner, John, 62, St. Martin's le Grand, E.C. No. 16 J.
Fayle and Co., Poole, Dorset, Nos. 13 E, 101 E, 133 E, 134 E, 135 E, 136 E.
Feldwick and Co., 14, St. Martin's Court, Leicester Square, W. No. 43 M.
Fibrous Slab Company (the Patent), Hale Mills, Staines. No. 102 M.
Fowke, Captain Francis, R.E., South Kensington. No. 3 M, 3a M.
Fowler, John, C.E., Queen Square Place, S.W. No. 20 M.
Freeman, W. and J., Stone Merchants, Penryn, Cornwall; and Wharf, Millbank, Westminster, S.W. No. 40 A.
French Bricks, Miscellaneous. No. 47 E.
French Tiles for Roofing. Nos. 75 F, 76 F, 77 F, 78 F, 79 F.
French Tiles for Flooring. Nos. 105 F, 106 F, 107 F, 108 F.
French Tiles for Walls. Nos. 135 F, 136 F.
Fry, Thomas, Slate Works, Pudsey Street, Liverpool. Nos. 19 C, 20 C, 21 C.

Garnaud, M., Paris. Nos. 46 G.
Garnkirk Company, M. and T. Sprot, Garnkirk, Lanark. No. 129 E.
Garrett, Brothers, Burslem, and 15, South Wharf, Paddington, W. Nos. 16 E, 81 E, 93 E, 94 F, 128 F, 3 H.
Gates and George, Caen Sufferance Wharf, Rotherhithe. Nos. 1 A, 2 A.
Gibbs and Canning, Tile and Pipe Works, Tamworth. Nos. 106 E, 119 E, 148 E, 149 E, 150 E, 12 G, 13 G, 25 G, 72 G, 73 G, 74 G, 83 G, 5 H, 15 H, 26 H, 34 H, 38 H.
Gilles, E., and Co., 15, Fenchurch Street, E.C. No. 100 M.
Goad, W., 45, Union Street, Friar's Street, Blackfriars Road. S. No. 15 M.
Gonzalez, Raffael, y Vals, Valencia, Spain. No. 133 F.
Grangemouth Coal Company. No. 137 E.
Greaves, J. W., Port Madoc, Caernarvon. No. 6a C.
Greece, Marbles from. No. 17 B.
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